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The Principles of Cow-Feeding*

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The principles which guide one in the rationing of dairy cows can be considered in three stages. In the first the composition and utilisation of foods will be dealt with, then the quantity of nutritive matter required—the so-called feeding standards—and lastly, the points which should receive attention in compounding a ration.

Composition of Foods.—A working knowledge of the ordinary chemical analysis of foods is essential—the average percentages of proteins, oil, carbohydrates, fibre, ash and water. The standard work of reference on this subject in England is Bulletin No. 48, entitled "Rations for Livestock," issued by the Ministry of Agriculture. It contains the average analysis of almost all the foods in common use on English farms; occasionally a knowledge of special conditions on any farm may make it necessary to attempt to adjust an average analysis to meet these conditions. The tables in this bulletin also give the average digestible percentages of each food, and the calculated "starch equivalent" of each food.

Utilisation of Foods.—It is commonly accepted that an animal uses food firstly to maintain the vital functions of the body and make good normal "wear and tear," and any balance left over is then used for production. This conception of a ration as consisting of a "maintenance" part and a "production" part has been invaluable in the development of systematic and economical rationing, but it should be clearly understood that there is no definite dividing line. Research work in many countries has, however, shown that the maintenance needs of an animal can be fairly accurately stated in proportion to its live weight or, more accurately, its body surface area, while the production needs, in the dairy cow, can be stated in relation to the quantity and quality of the milk produced.

There have also been numerous attempts to devise a short and simple method of stating the full nutritive value of a food or ration, and in recent years in this country the starch equivalent method has been almost universally adopted. This method takes account of the digestible protein, fat, carbohydrates and fibre in a food, adds together the value of each of these constituents for fat production and states the results in terms of starch; thus the "starch equivalent" of oats for production purposes is said to be 60, and this means that for fat production 100 lb. of oats are equal to 60 lb. of starch. I think this method is much simpler than the old method of stating requirements in terms of protein, fat and carbohydrates, but it cannot be used alone. It is well known that the protein in milk can only be made from protein in the food, hence in stating the nutritive requirements we must specify the amount of starch equivalent *including* so much protein equivalent.

Feeding Standards. — After much study, general recommendations for English conditions have been made as to the maintenance and production needs of dairy cows. These can be stated briefly as follows:—

For Maintenance: 6 lb. of starch equivalent including 0·6 lb. protein equivalent per 1,000 lb. live weight daily.

For Production of Milk: 2·5 lb. of starch equivalent including 0·6 lb. protein equivalent per 10 lb. milk containing 3·7 per cent. fat.

The average dairy Shorthorn weighs fully 11 cwt. and the maintenance requirements for such a cow are 7 lb. starch equivalent, including 0·74 protein equivalent. There are numerous bulletins and leaflets available showing the quantities of ordinary foods which supply this maintenance standard. The standard for milk production has been criticised recently in respect of the protein allowance per gallon. Research work carried out in the United States and on the Continent has indicated that appreciably less than 0·6 lb. digestible protein will be sufficient for 1 gallon of milk, and large scale experiments involving several hundreds of cows on different farms in the South of England, are at present in progress with a view to obtaining information as to whether a reduction in this standard could be recommended under English dairy farming conditions. Cows producing milk

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of high quality such as the Channel Island breeds require a slightly larger allowance per gallon.

The giving birth to a calf is another form of production which is essential in the dairy cow, but as a rule no statement is set out for this particular requirement. The general recommendation is that in-calf cows should be so fed during the dry period that by the time they are due to calve they are in good condition and have replenished their mineral reserves.

It is also necessary nowadays to consider the mineral supplies of the ration as well as the amount of starch and protein equivalent. Tentative standards for minerals have been suggested, but there is apparently considerable variation in the degree to which mineral substances are assimilated and the guiding principle in the compounding of rations is to attempt to ensure a proportion of lime-rich foods in the diet, and, where cows are subjected to the strain of heavy milk production or frequent breeding, to provide a mineral mixture in addition to the mineral substances contained in the ordinary foods. Generally speaking, the mineral substance most likely to be deficient is lime, and the free use of foods of the leguminous family—clovers, lucerne, vetches, etc.—goes a long way towards ensuring an adequate amount of lime for average production. The cakes and meals given usually supply an adequate amount of phosphoric acid. Where a mineral mixture appears desirable, one frequently recommended is 2 parts crushed salt, 2 parts finely-ground chalk and 1 part sterilised feeding bone-flour.

Brief reference must also be made to the vitamin requirements, but fortunately the evidence obtainable under English conditions goes to show that there is little risk of any deficiency when cows are receiving a normal ration of home-grown and purchased foods and are also obtaining exercise in the open air. There does appear to be a risk of deficiency of vitamin D in the case of heavy yielding cows kept entirely indoors and receiving no green food.

Essential Qualities in a Ration.—In addition to the knowledge of the chemical composition of foods and the quantities of these foods required to comply with the ordinary feeding standards, it is necessary to consider other points of a more practical nature in compounding a ration. The first of these is the *quantity* or *bulk* of food. It has been customary to consider the bulk of a ration in terms of dry matter, but this method, though useful, is of limited value because in the cow's stomach the foods do not exist in the form of dry matter but as a moist, bulky mass; also, the rate at which the food passes through the stomach and intestines will vary according to the condition and quality of the food. Nevertheless it is important to control carefully the quantity of dry, fibrous foods in the diet of heavy yielding cows, so that the stomach capacity and digestive juices may not be wasted on more or less unproductive foods. There have been numerous instances where an increase in milk yield was obtained when coarse, fibrous foods were reduced in amount.

The *palatability* of foods must also be considered. Special treatment such as steaming and spicing will make a food more attractive and enable the farmer to make use of foods which might otherwise be unused, but under such circumstances it is necessary to keep in mind the nutritive value of the ration as a whole. Certain foods should be given after grinding to a rough meal, and it is also important to consider the texture of a mixture of concentrates. It is easily possible to prepare a balanced mixture of foods such as bean meal, maize meal and cotton-seed meal, but such a mixture will be heavy and may tend to cause indigestion. It is a better practice to include a proportion of flaky foods such as crushed oats, bran, flaked maize or dried grains in a meal mixture and in this way allow the digestive juices to act more promptly and efficiently. The effect of the ration on the *digestive system* is also important. It is generally believed that the ration for a dairy cow should be moderately laxative in effect, and there is room for the use of knowledge and judgment in the selection of foods which will give this result and avoid those which are of a definitely constipating tendency.

The *nutritive ratio* of a ration requires only brief mention. It used to be the custom to work out the nutritive ratio, that is, the proportion of protein in relation to the fat and carbohydrates taken together, but the newer system of stating the maintenance and production requirements in quantities of starch equivalent and protein equivalent makes such a calculation unnecessary. If a ration complies reasonably with the standards the nutritive ratio will be all right. The *cumulative effects* of certain foods also sometimes need consideration. It is found that the extensive and continued use of wet brewers' grains may affect the health of the cow so that her breeding powers and resistance to disease are slightly impaired, and there may be from time to time other instances where the continued use of a badly balanced ration affects the health and productivity of individual cows.

The effect of a ration on *the produce* is also an important point. The dairy farmer must avoid foods which tend to impart a taint to milk or must use these at a time when the tainting effect will be reduced to a minimum. On the other hand, the choice of foods which will maintain the colour of winter milk, cream and butter, is an important point, particularly to the producer-retailer and butter maker.

There is also the question of the effect of individual foods on the fat content of milk, and although there are some exceptions, it is still generally true that the fat and solids-not-fat content of milk produced by cows on an adequate and well-balanced ration cannot be permanently changed by changes in the foods. Experimental work has shown that cod-liver oil lowers the fat content and the feeding of butter may at times increase the percentage of fat. Also, on the Continent, palm kernel and cocoanut cakes have a reputation for fat production which so far they do not appear to have earned in this country.

The last essential point in the selection of ration is that of *cost*, but this feature need not receive special attention at this meeting.

In conclusion, it must be clearly understood that the general principles of rationing which have been outlined require careful and almost individual interpretation in relation to each farm. It is only when the conditions on the farm have been fully grasped and when the composition of foods, compliance with feeding standards, and the specific effect of individual foods have been considered, that a thoroughly satisfactory ration can be prepared.

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Discussion

Professor MILLER, opening the discussion, said that he thought it would be their wish that he should first express their thanks to Mr. Mackintosh for his kindness in coming there and giving them such an instructive and interesting contribution. (Hear, hear.) In the second place, he should like to say that while he felt it was a privilege to be asked to open the discussion on an address given to them by one whose name was known throughout the world, it was with a considerable amount of trepidation that he did so. Mr. Mackintosh's reputation, as they all knew, was one which had had to rest to a large extent on the practical application of the work he had been doing, by a class of people (dairy farmers) who were doubly critical: critical, in the first place, because the cost of feeding was to them a vital factor; in the second place, because any recommended method of feeding which might not produce a lucrative return would be immediately condemned. Mr. Mackintosh hailed from north of the Tweed; that also made it a little more difficult because amongst other worthy characteristics he possessed the trait of extreme caution and had not left many loopholes in his address. In consequence of that he would have to select other points which he thought might be worth mentioning and which Mr. Mackintosh had not more than touched upon here and there. He was afraid those points were not exactly connected, but perhaps they would forgive him for that.

One of the first things that came to his mind was the difficulty that there was in using figures based on an average composition for a set of foodstuffs which varied not only from farm to farm and soil to soil, but also from season to season. One illustration of this difficulty was the very marked difference in the composition of mangels and hay in a year which had been very wet and in a year which had been very dry. Compositions also varied according to the ripeness of the crop. It was important to give mangels an opportunity to ripen, *i.e.*, an opportunity for the amide protein to be converted into protein which could be utilised by the animal. These illustrations showed the difficulty there might be in using fixed standards which were laid down by the Ministry of Agriculture.

He would like Mr. Mackintosh to tell them something further concerning the use of cacao shells, one of the recently introduced foods which was now used for feeding dairy cows: particularly to guide them whether to believe the accounts which had been published concerning the content of vitamins A and D and theobromine. His private opinion on the usefulness or otherwise of cacao shells would be most useful. He asked that because he understood that Mr. Mackintosh had been concerned in the recent investigations carried out on cacao shells.

He hoped that Mr. Mackintosh would give them a lead in that vexed question as to whether they should or should not grow roots. Personally he believed that it would be a very sad day for the stock of this country when the last turnip was eaten and when the changeover to an entirely non-root ration occurred.

Next, he was very seriously tempted to raise the question of production versus conformation. It was not with any idea of provoking an argument, but if he might be allowed to do so, he desired to put forward one or two aspects of the question which he thought had escaped some of those agriculturalists who had been writing and violently advocating that far more attention should be paid to the production of the cow than to her conformation—the sort of arguments which included a criticism of the Dairy Show; where statements were made that it was not a dairy show at all but a beauty show for dairy cows! In the first place, conformation was not a question of beauty only. One had only to suggest that the dairy cow which had a flat chest had less room for a properly functioning heart and lungs than one with well-sprung ribs; that the quality of the skin could be directly correlated with mammary activity—the mammary gland was after all only a modified skin gland—and that even such a beautiful feature as a level back had a definite sound physiological basis. With such a back, there was

a satisfactory development of the lumbar and sub-lumbar muscles which were so important for locomotion and for withstanding the added weight of the foetus during pregnancy. Similarly, a capacious abdomen was not a point of beauty only; it was an effort on nature's part to accommodate a more efficient digestive system. Far more important was a well-shaped and balanced udder; this made milking far easier and lessened risks of trauma and so on. Mention might also be made of the easier diagnosis of such conditions as tuberculous mastitis in a bi-laterally symmetrical udder than in one which was normally lop-sided. The more one considered conformation, the more one was forced to the conclusion that good conformation had a very definite economic value and—quite as important—it was a physiological index to the cow's capabilities. He had expected that Mr. Mackintosh might be dealing with the rearing of calves and he had made a note to the effect that he thought it was a very laudable thing indeed that far more attention was being paid to a better dietary for calves. The tendency now was to avoid that condition of "storing" calves until the time that they came into production as heifers. One of the most important changes in the last few years had been that the average thinking farmer was prepared to invest money in feeding his calves better than he had done previously. The effect of that would be seen in a healthier and better-shaped, and a more economic, dairy cow population in future years. He also thought that the foundations for the success of the calf lay just as much in the uterus of a pregnant cow as they did in the period of post-natal life of the calf. Mr. Mackintosh touched upon that point when he spoke of the advisability of building up a mineral reserve in the cow before she calved. In addition to that, he was quite sure that an adequate mineral intake during the last third of pregnancy had a great effect upon the quality of a calf itself.

He desired to ask Mr. Mackintosh one specific question in connection with the reduction of the protein equivalent that he mentioned in his address. Was there any risk in reducing the protein equivalent below the normally accepted 0·6 lb., of getting a loss of condition in the cow herself? Was one not just going a little below the margin that a cow required? He would have agreed with him if he had said "provided that this amount of protein contained a proportion, at least, of protein of animal origin."

He thought that probably it ought not to be necessary, in the year 1937, to emphasise that the only satisfactory method of feeding dairy cows was on a basis of production, as had been so ably outlined in the address, but he felt that emphasis was still necessary because there were still many farmers who refused, or declined (there was a difference between those two words) to go to the trouble and bother of feeding each individual cow according to her production. Just recently he had had two clear-cut instances of bad effects from not feeding according to yield. In the first case there was a perfectly satisfactory ration being given to a herd of cross-bred Shorthorn cows, the milk from which went into one of the big London creameries and was tested every few days for butter fat content. The farmer received a complaint that his average was 2·4 per cent. on two occasions. It appeared in the course of investigation that the head cattleman had been an exceedingly conscientious man who was eager to feed his cows to the very best advantage. He had been feeding above the cow's requirements—partly as the result of using too large a scoop and partly owing to an idea that cows should be fed for a gallon more than they yield. The result was that the cattle got into tremendous condition and the higher yielders scoured intermittently. By doing nothing else than remeasuring his scoops and making out a feeding chart whereby each individual cow was given an amount exactly according to her production, the trouble ceased immediately. There was an instance of the infliction of injury to the owner's pocket by over-feeding.

The second instance was a dairy farmer whose cows were in every stage of bodily condition from fat cows down to the thinnest of thin cows —a most irregular herd. He asked the farmer, amongst other things, what his ration was—to be told that every cow was getting eight pounds of a cake mixture: nothing more and nothing less. The effect had to be seen to be believed: the cows' yields were in inverse ratio to the degree of condition they carried. That was just another instance of how important it was that the cow should be fed according to her production and that those figures and standards which had been so well described by the essayist were not just unnecessary refinements.

If he might, in conclusion, assume the rôle of minor prophet, he thought the time might possibly come when it would not be enough to balance the starch and protein equivalents, to adjust mineral intakes, bulk, and quantity, to provide optimum texture and palatability, etc., but if one could interpret the results of recent research work aright, when it would be of importance to ensure that the animal had an adequate supply of the essential amino-acids. He said that with some degree of hesitation; but it might be necessary to consider the amino-acids in the ration in relation to the maintenance of growth and repair of tissues, the production of milk, the persistence of oestrus and the rest of the reproductive function. Active work on amino-acids was being pursued at the Hannah and he saw Mr. Edwards present and would leave him to elaborate this aspect. Meanwhile,

a full and accurate knowledge of the amino-acid content of many of the commonly used foodstuffs was not yet available. Until this whole question was more fully understood, he thought that the most satisfactory method was to accept the principle that one food could reinforce another. One was led to believe that the question of variety in the diet was not by any means the least important of the criteria which Mr. Mackintosh had so ably outlined.

Mr. S. J. Edwards, of the Hannah Dairy Research Institute, invited by the President to follow the opener of the discussion, observed that he must say, in the first place, how pleased he was to be present at a meeting of the Central Veterinary Society and to hear that important subject so ably introduced by Mr. Mackintosh. During the last two years he had been fortunate in being brought into contact with dietary experiments in so far as attending to the health of the cattle was concerned.

It seemed to him that the orthodox methods of rationing for milk production, while taking into account the gross requirement of the dairy cow for crude protein, carbohydrate and fat had given insufficient attention to the suitability of the protein chosen. The accepted feeding standard based on 0·6 lb. protein equivalent per gallon of milk had generally assumed that the proteins of the common foodstuffs were of equal nutritive value. Proteins, however, were not alike in their chemical composition and some were richer than others in those amino-acids which were known to be indispensable constituents of the diet. In the production of milk the dairy cow was asked to secrete in large quantities one of the most complete proteins known and since it could not synthesise in its own body all the amino-acids required for this work it was clearly of primary importance that the diet of the cow should be rich in these materials. If we considered the ability of a ration made up from common foodstuffs, such as bean meal, linseed cake, meat meal, earthnut cake, etc., to supply the essential amino-acids in adequate quantities and correct proportions it would seem that deficiencies were most likely to occur in their lysine and tryptophane content. Since the proportion of these amino-acids in milk was high it was to be expected that there would be a more efficient utilisation of protein for milk production when the dietary protein was adequate in lysine and tryptophane.

For some years metabolic studies on dairy cows had been carried out by his colleagues Drs. Wright and Morris. Their experiments had yielded direct evidence regarding the nutritive value of various foodstuffs in relation to their amino-acid content. By comparing rations made up from different foods they showed that when the lysine and tryptophane content was adequate a maximum milk yield was obtained whereas on rations deficient in these the yield was reduced and this was accompanied by a high wastage of nitrogen derived from protein in the urine. They had classified the more common foodstuffs according to the "biological values" of their protein for milk production. A very significant result of their analysis was that home-grown feeding stuffs such as beans, peas, blood meal and dried grass were found to be relatively rich in lysine and tryptophane.

Mr. Edwards then said that it remained to assess the significance of work of this kind from the point of view of animal health and the routine practice of the veterinarian. While little was known of the effects of high protein feeding in the ruminant it was possible that the harm known to follow such a practice in small animals might have its counterpart in the feeding of ruminants. In advocating a feeding practice based on the qualitative nature of the diet it might be said at least that milk production would be effected with considerable saving of metabolic work to the animal, a factor which might be of some significance in determining its health and freedom from disease. There could be no doubt that any practice of feeding which reduced the protein intake was bound to be an advance on the present methods by which forcing cows for milk production was a common practice. This knowledge might usefully be employed in supplementing the present principles of preventive medicine. In this connection he put forward a plea for closer co-operation between the nutrition expert and the veterinarian so that factors of such interest to both might be investigated along lines capable of yielding the maximum results.

Apart from protein feeding there remained other aspects of the diet which deserved attention. While clinical symptoms of mineral deficiency in adult dairy cows were not encountered in this country, the experience of workers in South Africa and Australia would suggest that under modern conditions of intensive stock farming it should not be assumed that the natural fertility of pastures was sufficient to ensure complete freedom from latent deficiencies. While proof of mineral depletion was extremely difficult to obtain it was certain that with the modern high levels of production and concentrate feeding attention should be given to the mineral balance of the diet.

Turning to the question of the rôle of vitamins in the nutrition of the dairy cow, Mr. Edwards said that recent results suggested that an investigation of the problem of their significance was urgently called for. Recently Meigs and Converse in America had shown that when pregnant cows were fed on a vitamin A-deficient diet (timothy hay) they calved prematurely although they were free from contagious abortion. Guilbert and Hinshaw found that when calves were born alive from cows on a vitamin A-deficient diet they suffered from severe diarrhoea at two to eight days. These facts were of the utmost importance in most parts of this country since from January till April little if any green food was available, so that pregnant cows were on a vitamin A-deficient diet and this might at least be one of the causes of white scour in calves which was so prevalent in the early spring months.

Dr. W. R. Wooldridge agreed with the two previous speakers that Mr. Mackintosh had given them such an interesting address that there was very little that the rest of them could add.

He was glad that Professor Miller had referred to the necessity of keeping an eye on the value of the proteins fed to cattle. He must confess that it was a shock to him to hear Mr. Mackintosh say that he knew of the work done on the biological value of proteins, but that he had not referred to it as it was all done in a foreign country—he could hardly believe, however, that Mr. Mackintosh placed Scotland in that category. (Laughter.) He thought that this point was of great importance to the veterinarian for in illness animals tended to eat little and to become emaciated; hence a food that contained proteins of high biological value and which was able to supply the animal with the amino-acid necessary

for rebuilding its tissues, or for the building up of the tissues of the foetus, would appear to be of greater value than another food containing proteins which were unable to supply those amino-acids. It was here that the veterinary surgeon might apply this knowledge of normal nutrition with success to an animal whose feeding was upset.

They must remember that Mr. Mackintosh had treated the subject from the point of view of the man looking at a dairy herd in the best condition: the veterinarian, however, was called in to those odd cases where matters went wrong. He had to advise the farmer on the rehabilitation of the animal which is diseased or unthrifty and which had probably lost a considerable amount of flesh. It seemed to him that those foods that supplied proteins of high biological value were the types of food that veterinarians should recommend when they were called in to advise upon animals in low condition. Examples of these fodders are fresh young grass or dried young grass, and blood meal dried at low temperatures.

A few words might be said, perhaps, on the question of vitamins—which Mr. Mackintosh had left aside, more or less. As veterinarians they must first of all remember that cows lived for most of their time under exceptional circumstances. They, of all animals, after the age of two to three years, lived specialised physiological lives always producing milk and calves. These two functions, each of which was normally considered to be a condition requiring special treatment, were going on simultaneously over a large part of the animal's life, and that meant that great demands were continually being made upon the animals' supplies of essential foods and those constituents, supplied in irregular fashion and small quantities, might be expected to be depleted. Thus the essential vitamins were being called upon more extensively in the cow than in any other animal. One might therefore, expect the results of avitaminosis to appear in dairy cattle more frequently than was usually believed and one wondered whether in fact avitaminosis did not exist to a greater extent than had been reported, and whether reproductive trouble was not frequently caused by shortage of vitamins A and E. Work by Hart and others indicated that if cows were not getting the best foods as far as the supply of vitamins was concerned, an avitaminosis was set up which led to abortion or the birth of weakly calves in which one got a high mortality from pneumonia. In one outbreak described by Hart, the trouble occurred as the result of feeding bad quality hay when the grass was "burnt," but the interesting point was that for treatment they divided the animals into groups and to three of these they fed fresh green food, fresh green food *plus* cod-liver oil, and cod-liver oil without green fodder, and in all three groups they got a large reduction of the trouble. That seemed to suggest that veterinarians might discover this type of sterility more frequently in cows improperly fed, *e.g.*, in animals of a struggling farmer who, in striving to economise, fed bad hay instead of good or tried to economise in other ways.

The importance of vitamin E to dairy cows was still unsettled, but there was some evidence that the treatment of cows with a history of sterility or abortion leads to successful pregnancy subsequently—treatment of these cases with wheat-germ oil. Tutt's work in this respect, reported in the *Veterinary Journal*, would be familiar to them. Similarly, Dryerre treated a large number of ewes, in flocks with a high incidence of abortion, with extracts of vitamins A, D and E, and he reports less abortion trouble in the treated group than in the untreated group.

He often wondered, too, if trouble due to vitamin D deficiency were not more frequent than was reported. Of course many instances of rickets and osteoporosis were known in cattle, but when one thought of the cow's normal food: most of the common foods fed to cows were either lacking in vitamin D or only contained it in low concentration, so that one would suspect a greater amount of vitamin D deficiency trouble than had been reported.

A question he would like to ask Mr. Mackintosh as regards the feeding of calves, was whether he believed with others that the calf should never be removed from its mother until it had had the colostrum. Colostrum contained a much larger concentration of vitamin A than did the milk itself.

Recently it had been shown that certain unsaturated fatty acids were essential for efficient reproduction. These acids were sometimes alluded to as vitamin F. Linoleic acid, one of this group, was present in linseed oil but as yet the importance of these factors in benefiting cows was uncertain.

He would conclude by asking practitioners to keep records, if they could over a period of years, of that type of trouble in cows that appeared to be dietetic in origin and especially when those troubles were associated with reproduction. Such a course would be bound to lead to some evidence that would be useful in unravelling the vexed question of vitamin deficiency in relation to the diseases of cattle.

Professor G. H. Wooldridge said that he wished to add his quota of thanks to Mr. Mackintosh; he thought he was perhaps in a better position than others to realise what a great sacrifice it had been to him, with his enormous duties, to devote that evening to them. He personally appreciated that sacrifice very highly indeed. Mr. Mackintosh had given them quite a treat in introducing that subject to them and, as Professor Miller had said, he was so much the master of his subject that there could be very little indeed for them to criticise in any destructive fashion.

He just wanted to draw attention to the transfer which was taking place from the old rule of thumb methods of feeding dairy cows to the present day methods based on sound reasoning and research on the effect of different foods. Some of the old farmers, who were rather more intelligent than some of their companions, had observed the differences in the milk yield resulting from variations in the feeding, and although they took as their standard ration the sort of thing outlined by Professor Miller, the more intelligent looked round their cows and varied it. One old farmer said to him quite frankly, when he asked about his feeding: "I start off with a certain ration to all these cows and if I find a cow giving extra milk I give her a bit more." He argued, the speaker remembered, that "one good turn deserved another"—(laughter)—and the results were very satisfactory.

The question of bulk had been introduced. Increased rations had been given in the new fashion for high milk yields. If the concentrates had been increased there must be some reduction of the roughage. He would like to ask Mr. Mackintosh's opinion in respect of the use of roots and the question of bulk. One expert—known to both Mr. Mackintosh and himself and doubtless to most of those present—said that it

was a great waste of money to give roots: a cow could go to the trough or pond and get water that way; but there was more to it than that. This had had a very far-reaching effect on another aspect mentioned by Mr. Mackintosh, and that was the question of the texture of the food. The importance of that was brought home to him every year at the Dairy Show. The cattle there were in the hands of cowmen, not always of the most intelligent type—good, sound men, who were apt to give a rather larger ration than they should of meals of that kind, so that the cattle were unable to eat some of their roughage. The effect was to produce a doughy mixture in the rumen, in which fermentation set up very rapidly—and produced the type of tympanites that was by far and away the most intractable. They must not lose sight of the importance of the roughage elements, such as were contained in the various forms of hay or green food or even roots that could be mixed with it.

The cumulative effects of certain food must be considered, said Mr. Mackintosh—could he give an instance of the deleterious effects of a too-long administration of large quantities of individual foods, such as grains? He would very strongly support the importance of that aspect of the case and he was going to suggest that the dangers that followed from neglect of that precaution and from other practices could and should be avoided by using a judicious mixture of the various concentrates. If there was any ingredient in any one of those concentrates which was likely to have a cumulative effect, or if there was a deficiency in any one of them, then that deficiency or that excess was likely to be balanced up by some of the other component parts of the mixture, and so, by the use of mixed rations of that kind, the balance was more likely to be maintained. The effect of that, he thought, was shown by a variation to which Mr. Mackintosh had drawn attention, namely, that individual foods would vary in their quality from year to year and from season to season.

The same thing applied, again, in respect of palatability. All of them would get very sick of a diet which was based on one thing, day in and day out. Mr. Mackintosh had wondered whether palatability had any serious effect on the nutritive value. He (Professor Wooldridge) said, without any hesitation, that Mr. Mackintosh's suspicion that it might have was well founded; indeed he himself would affirm positively that it had such an effect. It had been shown physiologically that the stimulation of saliva in the first instance was followed by the secretion of other digestive juices in succession throughout the alimentary tract. That must be followed by increased and improved assimilation. It brought one back to the days of Marie Lloyd who said that "A little of what you fancy does you good." (Laughter.)

Reference to the use of cacao shell for feeding purposes was not by any means new. During the late War there was a scarcity of grain of different kinds for the feeding of animals and, particularly for feeding dogs, cacao shells were used. In several kennels to which he had his attention drawn there was a very definite ill effect on the general nervous system of those dogs. Other dogs that were kept at the same place that were not fed that particular type of meal were not affected in the same way at all. When the feeding of this material was discontinued the health of the dogs slowly returned to normal. He put that down entirely to the cumulative effect of theobromine.

He wished again to thank Mr. Mackintosh for his excellent paper.

Dr. J. T. Edwards, after complimenting Mr. Mackintosh upon his concise and lucid exposition of a very wide subject, declared it would be impossible in the course of discussion at that meeting to treat the theme of his address except in terms of its general impact upon the work of the veterinarian. He (Dr. Edwards) contended that however well a diet might be computed and balanced in the light of already ascertained biochemical knowledge for the immediate purposes of some given kind of production, such diet ought not to be accepted as a good one unless it fulfilled two fundamental requirements. These were first, that it should be a food that would contribute in the highest degree to the animal living longest in a state of perfect health, and, secondly, that it should be conducive to high fertility and to the easy birth and rearing of healthy progeny.

Dealing with the first of these requirements, he emphasised the need to distinguish clearly between ill-health caused by faulty feeding and that caused by specific infectious disease. There was unfortunately still current a popular belief that a disease like tuberculosis could arise through defects in the nutritive qualities of food. It could not be too clearly impressed upon the lay mind that a disease of that kind when it was contracted through feeding only arose through contamination of the food with the specific infectious material; and, furthermore, that its spread in a dairy herd was determined by the presence of carriers of infection and the spread intensified by conditions of overcrowding but in no wise aggravated by any bad feeding. Hence, the only means that would cause the disease to disappear would be to eliminate the carriers, and nothing was likely to be achieved by improved feeding. In researches which he had carried out bearing upon this point as it concerned another important infectious disease of cattle it had been demonstrated that bad feeding rendered susceptible animals more, and not less, resistant to infection, and tended to cause rapid extinction of outbreaks. This observation might well not be of general application to other infectious diseases, and it was very likely that certain infections of the alimentary mucosa of the new-born might gain a foothold by withholding certain ingredients present in its natural food. Further experimental research upon these relationships was necessary.

He (Dr. Edwards) then dealt with the disturbances to health which arose sooner or later with some of these artificially compounded rations. These disturbances, already wisely referred to by Professor Wooldridge, often manifested themselves in the form of inappetence, constipation, or diarrhoea. Using a balanced ration of this kind for the feeding of a large dairy herd in his charge in India and increasing it *pari passu* with the milk yield, he found that, as had been already noted by several observers, careful watch had to be kept over individual animals, for some tended to show an abrupt decline in yield with increase in the ration, and restricted feeding had to be undertaken at once to restore the yield. Working more recently with rats, he found he had to follow the experience of other workers in the feeding of his "well-fed" groups, which, although they grew rapidly on a standard theoretically complete synthetic diet, sooner or later acquired a distaste for it, and had to be given regularly small quantities of natural foods, such as raw liver and carrot, to maintain their growth.

Dealing further with the question of infertility, he (Dr. Edwards) stressed the importance of differentiating likewise between specific infection (such as brucella infection and trichomonad infection) and other causes, which it seemed from a survey he had recently made of the literature (*Proc. Roy. Soc. Med.* 1933. 27. 1192) could be attributed in overwhelming degree to nutritional deficiencies and accounted for by far the greatest proportion of cases of barrenness in dairy cows generally. He had been much impressed with the differences in the wastage rate from sterility in the dairy herds of Denmark and New Zealand. In Denmark, where the cows were kept indoors most of the year and fed on concentrated foodstuffs for high milk production throughout the year, the annual wastage from permanent sterility amounted to about one in every 15 cows. In New Zealand, on the other hand, where the cows were kept permanently out-of-doors, were pasture-fed and breeding was arranged to take place so that the cows calved always at the season of rich growth of grass, the proportion of barren cows in any given year was low, and most of these, it was said, would hold to first service if kept over the winter till the next spring. It was interesting to recall an illuminating article by Professor W. L. Williams (*Vet. Rec.* 1935. 15. 49.) in which a record was given of the fate of a herd of high-yielding dairy cows after they had been maintained for several years in a locality in which they were unable to obtain adequate sustenance from the local natural resources. Serious breeding troubles set in, the most oustanding phenomenon being the general prevalence of genital hypoplasia, which was attributed to faulty nutrition from birth to sexual maturity. He (the speaker) had frequently observed that when rats were fed on the standard theoretically complete diet already mentioned they either failed to breed or, when they bred, ate their young. It might not be irrelevant to mention a statement which had been made by an American writer recently that people in his country after three or four generations of "rich living" in towns became infertile. It would seem, in any case, that to test the permanent value of any dietary on a given species of animal it was necessary to examine thoroughly its effects after feeding for at least three generations.

Happily, the intensive researches of laboratory workers were now throwing new and often wholly unexpected light on the various problems which made for a perfect dietary and they revealed the crudity of former precepts, the outcome of primitive biochemical knowledge, which would prescribe the feeding of an animal, with its infinitely complex mechanisms, in simple terms analogous to those applicable to an internal combustion engine, defining so much energy and so much replacement material for each unit of production. It had been wondered sometimes why the veterinary profession had not taken a more leading share in these recent great advances in our knowledge of nutrition. Perhaps, it would be found that although they might not have followed the standards which came in fashion, the older generation of veterinary surgeons whose duties brought them often more particularly into touch with the economics of feeding horses collected a good deal of practical information the usefulness of which was not likely to be superseded. It was one of the great merits of Professor Linton's text-book that it had put many of these observations on permanent record. It was said of the late revered John Malcolm that his dearest wish was to live to see a corn merchant become Lord Mayor of Birmingham so that he could show him what he had been able to save in the feeding of the Corporation's horses. The prime importance of skilled animal observation in addition to knowledge of laboratory technicalities had been fully realised by the most competent workers in nutritional research.

Dr. Edwards concluded by saying that everything seemed now to point to the best dietary for the dairy cow being its natural food, namely grass, provided it could be obtained in good quality and abundance whenever required. With the need for maintaining high milk production throughout the year including what might be regarded rightly as the abnormal season for breeding, it was obviously impossible to achieve this ideal, at any rate at present, and so the British dairy farmer must remain at a disadvantage when compared with the New Zealand farmer. However, experiments now in progress seemed to indicate that the prospect was not altogether remote of artificially drying and conserving grass so that it would retain on storage the properties it possessed in the young and highly nutritious stages of growth. Indeed, it seemed to him that the researches which were now being actively promoted into improving grasses and grasslands were of most hopeful augury. Among these researches might be mentioned those carried out by Professor Stapledon on the breeding of pasture grasses, the work at Cambridge and elsewhere, demonstrating the unrivalled properties of grass in its early stages of growth, and the work carried out, in which Sir Arnold Theiler and his staff played an important pioneer part, indicating the relationship between the nutritional value of pasture and the chemical composition of grasslands. Failing this supply he would suggest that the best dietary for dairy cows might be regarded as one which approximated as closely as possible good young grass.

The Reply

Mr. Mackintosh, replying to the discussion, said that he could give them another address, as long as his previous one, on the points that had been raised, but he would try to merit the adjectives of conciseness and lucidity that had been applied.

Professor Miller quite rightly referred to the risk in using the average chemical composition of foodstuffs as a basis for rations. He realised that risk, but he would ask them to pardon any lack of detail in the early part of his address. When trying to give them general principles, he pointed out that the application of these principles would vary from farm to farm.

He believed that they could get help in rationing if more use were made of the ordinary chemical analysis of hay. The analysis of hay was being studied by different chemists throughout the country, and in view of the importance of hay he was quite sure that they would have to pay it more attention in the future.

All he could tell them about cacao shell was derived from what his colleagues had told him as the result of their experiments. He wondered how many of them saw that particular publication (holding up a journal): it was entitled "The Farmer's Guide to Agricultural Research," and it was issued annually by the Royal Agricultural Society. The current issue contained a summary of the work on cacao shell. When given to cows this substance increased the vitamin D content of the milk. At Reading they had limited it to two pounds per day per head because they did not know what would be the effect of the theobromine content.

Then he came to roots, a point which Professor Miller and Professor Wooldridge had both raised. He had no difficulty concerning it. He regarded the root question entirely from the economic standpoint. If the farmer could grow roots economically—and he left the definition of that word to the farmer—by all means let roots be grown; if root crops could not be grown economically then do without them. When he started enquiries into feeding in the South of England, he came across instances of cows receiving more than one hundredweight of roots per day: that was gross over-feeding and wasteful. If a farmer could grow roots economically, let him grow enough to give an average of from 30 to 40 pounds per cow during the winter period.

If addition to roots, kale and cabbage should be considered: kale was a valuable food and was replacing roots on some farms; it kept the land cleaner and it helped to maintain the colour of the milk.

Professor Miller had referred to production and conformation. One must have a cow with a body that would contain adequately the vital and digestive organs needed to produce the large quantity of milk required of the cow to-day and that would at the same time enable the cow to continue breeding. For food capacity they wanted good rib development and a strong back; udder shape was most important—a shapely, well held-up udder that would be protected by the flanks of the cow from injury was essential. He had put before audiences of farmers this conception—that if one tried to measure the value of the cow as a whole, one should give two-thirds to what she produced and one-third to her conformation.

Regarding calf-rearing, he did not want to go into it at all deeply—it was too big a subject. It had two aspects: that of rearing calves for beef production and that of rearing heifer calves to maintain the stock of dairy cows: one variation of the latter occurred when the farmer wished to sell as much milk as possible; the problem then was rearing the calves on the minimum quantity of milk. At Shinfield they had found that they could rear their calves on between 30 and 40 gallons of whole milk, spread over the first eight weeks, supplemented with a dry cake and grain mixture and hay. A proportion of white-fish meal or meat-and-bone meal was included to provide for skeleton growth.

Concerning the effect of pre-natal treatment on the calf, he had drawn attention to the fact that the cow would sacrifice herself to produce a good calf, and he laid stress on the feeding of cows during the pre-natal period.

Then they came to the amino-acid question. Dr. Wooldridge had twitted him for not referring to the work of the Hannah Institute. His answer was that, so far as he referred to American and Continental work, he was referring to the *quantity* of protein in the ration—not the *quality* of the proteins. The work at the Hannah Institute was exceedingly interesting and no facilities existed at any dairy research institute in England for similar investigations. The protein content of rations could be studied quantitatively and qualitatively. At Shinfield they were dealing mainly with the former, working in co-operation with a number of farmers, in order to obtain data from a large number of cows.

The references to vitamins and deficiency diseases illustrated a difference in outlook between himself and his audience. He was looking at feeding from the point of view of advising farmers to get rations that would keep their cows going on well: when anything went wrong, the veterinary surgeon was called in and his point of view was to find the cause and suggest a cure. He would suggest that in attempting to diagnose the cause, they would require reliable information as to what the type of feeding had been for some time previously. That information was very difficult to get, and, moreover, when obtained, had to be interpreted with caution.

In reply to Dr. Edwards' argument that the worse the feeding the higher the resistance, he looked at it in this way, that with those types of herds one was bound to get some animals affected with tuberculosis and that there would be the possibility of infection. He would like to have Dr. Edwards' references.

[Dr. Edwards: "Next month I am reading a paper at the Royal Society of Medicine on this subject and I will send you a reprint."]

Continuing, Mr. Mackintosh said that in regard to the suggestion that they wanted to get back to natural conditions, the dairy cow of to-day was, strictly speaking, not a natural animal. One of the fundamentals of his recommendations to dairy farmers was the use of the plants of the leguminous family, because of their lime content. That, plus balanced concentrates, gave the best chance of enabling their unnatural, but more profitable, cows to continue production and reproduction.

He desired, in conclusion, to thank his audience very much for the careful attention they had paid to his paper and for the informative way in which they had discussed it.

MILKERS TO WEAR MASKS

Cuckfield (Sussex) Rural District Council have decided to distribute 300 masks to be used by milkers when at work. Dr. W. B. Scott, the medical officer, stated that it was hoped in this way to prevent outbreaks of scarlet fever, for it was believed that infection was spread by men breathing on the milk. The masks will be similar to those used by surgeons and nurses during operations. They are easily washed and sterilised.

* * * * *

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Some Problems Confronting the Veterinary Profession*

G. K. WALKER, C.I.E., O.B.E., F.R.C.V.S.

The profession is going through a very important period of its existence, and several vital problems are under consideration which require very careful handling. The eye of the public is upon us, as never before, and a false step might lead to misconstruction and even more serious difficulty. Unanimity and goodwill within the profession are more than ever required.

The relation of veterinary science to public health and the exigencies of veterinary education, which, broadly speaking, are closely related, are two questions of great importance to-day. There are two bodies to which we look for guidance and action in these matters, *viz.*, the National Veterinary Medical Association of Great Britain and Ireland, of which this Association is a Division, and the Royal College of Veterinary Surgeons, which is the governing body of the profession. The first question can be more properly dealt with by the former, whilst the second is essentially the care of the latter, though indirectly both bodies are affected.

It is apparent that the veterinary services concerned with the control of animal diseases and with the national health, in so far as it is dependent on animal products, are not organised as they ought to be, and that in many ways we are behind other nations in administrative efficiency in these matters. I think that most thoughtful persons would agree that the existing position is very unsatisfactory. This is not the time and place to go into details, which are sufficiently well known to ourselves; a general reorganisation is overdue. We should make every endeavour to convince the public that the profession is capable of broad views and constructive ideas. The scheme of reconstruction prepared by the National Veterinary Medical Association is undoubtedly conceived on sound lines. A central veterinary administration is an urgent need to bring about the necessary co-ordination of departmental and local activities. I agree with the recommendation contained in the report that it is necessary to utilise to the fullest degree the services of the general practitioner. It has to be realised that, under a democratic system, a social movement cannot be resisted, and there is no doubt that the trend is towards the nationalisation and socialisation of veterinary services in this country. We must anticipate further steps in that direction. The change has already taken place in other European countries and it appears to work well enough in some, particularly in Scandinavia. Bureaucratic administration is apt to become mechanised to such an extent that the agents lack vision and enterprise and the public interests suffer in consequence. Narrow specialisation is soul-destroying and needs a co-ordinating influence. The time may come when the unit of administration will be the local veterinary hospital and laboratory, adequately staffed and equipped for every branch of activity, but that time is not yet. It might be ideal, but the financial side of the question would provide the final argument. It could probably be brought about only by instituting a system of insurance assisted by State subventions. It would have many advantages, particularly in arranging for the effective use of veterinary personnel.

A matter which has not received much attention from our profession up to the present is the question of the protection of animals of the farm from air-raids. Our progress in civilisation is marked by the need of an organisation to deal with this problem. A scheme for anti-gas instruction has been devised by the Home Office, in which veterinary practitioners are expected to participate. It is apparent that the authorities are alive to the necessity of taking measures to protect the valuable livestock of the country.

The British Medical Association has undertaken, through its respective Branches, to organise local courses, which, I understand, will be open to veterinary practitioners. I suggest that advantage should be taken of this training in order to gain a knowledge of general principles, which could then be adapted to the special measures required for livestock. A certain number of veterinarians should eventually be available to instruct local classes organised by the National Veterinary Medical Association through its Divisions. An alternative and probably a better scheme would be for the Home Office to appoint a trained veterinary officer for this purpose. The matter appears to me to be of sufficient importance to justify the appointment of at least one full-time instructor. Owners of livestock would doubtless be glad to have the advice of trained veterinary practitioners in regard to the best method of protection from gas and the treatment to be adopted after gas infection, particularly from the persistent gases.

*Presidential Address (exclusive of introduction) to the Royal Counties Division, N.V.M.A., delivered on the occasion of the Annual General Meeting, held at Reading, January 22nd, 1937.

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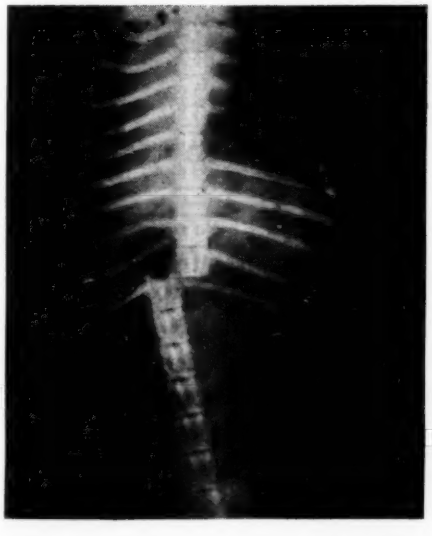

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The chief functions of the Royal College of Veterinary Surgeons are registration, which includes certain disciplinary powers, and the conduct of examinations for the several diplomas of the College. The first is a very responsible and important duty, on the judicious exercise of which the welfare and the standing of the profession largely depend. Part of the duty connected with registration is the safeguarding of the profession from the usurpation of its rights and privileges by unqualified persons, involving many difficult and delicate decisions.

To-day I propose to deal more fully with the conduct of examinations, as I look upon this duty as one of great importance and it is one which interests me particularly. I am convinced that the welfare of the profession and the degree of public estimation it achieves are very dependent on the wisdom and vision exercised in carrying out this duty. It is very necessary that the members of Council entrusted with this responsible work should make a close study of educational questions in general and veterinary education in particular, as these demand special knowledge and experience. Personally I have felt for some time that the Council of the College would do well to obtain outside educational advice when making important changes in their examination systems. It is true that the College is more concerned with training than education, but nevertheless, its examination system includes general education. I have purposely differentiated between training and education because the former sometimes tends to supplant the latter and I feel that our students would be better equipped for their life work if they were brought more into contact with students of other professions; and this applies also to those who are no longer classed as students. This question of intellectual contact is, however, more a matter for the teaching Colleges than for the examining body. There is no doubt that recent advances have done much to improve matters. The raising of the standard of preliminary education and the acceptance of Higher School Certificates and other qualifications for certain exemptions from the standard course of study are significant instances of a desire to raise the standard and provide elasticity in method. It is obvious that the course of study for the Diploma of Member of the Royal College of Veterinary Surgeons demands much mental concentration over a lengthy period of time, and, even with a nominal five years' curriculum, the course is overcrowded. Five years, apart from the preliminary sciences, could be fully occupied, but for the present we must be satisfied with the existing period. Certain revisions will doubtless require to be made, and in this connection some of the recommendations made in the report of the conference on the medical curriculum, presided over by Lord Dawson of Penn, and issued nearly two years ago, deal with many problems which relate to veterinary education very closely. The report is worthy of appreciative attention, as common defects are dealt with and constructive advice given. In the diploma examination of the R.C.V.S. changes have recently been made in the system, which lead to a better test of knowledge. Those who hold the responsible position of examiner should realise that, in most of the subjects of the veterinary curriculum, feats of memory are not so essential as the ability to apply scientific knowledge to scientific art in a practical manner. Teachers also should realise that their duties do not so much consist in reeling off a set of lectures from year to year as in developing the power of observation and technique acquired from knowledge gained from their instruction. Our teaching Colleges suffer, no doubt, from many difficulties, including paucity of staff and, in some cases, inadequate equipment, due to financial stringency. If I am considered to be rather too critical of existing conditions, I do not mean to suggest that vast improvement has not taken place since my own student days. At that time the term "practical man" was favourably applied by the public to a certain type of practitioner. His main characteristics were his claim to make a lightning diagnosis of any disease affecting any farm animal, his ability to dispense large quantities of the most potent and nauseous nostrums and his acrobatic ability in the control of his patients. To-day the picture is different. We favour the man who takes time and care over his diagnosis, uses drugs with discrimination and exact knowledge, and controls his patients with a minimum of physical force. The practical man to-day is he who has learnt to apply his knowledge, and our examination system should aim at influencing this training and demanding practical tests accordingly.

Whatever advances we may bring about in the methods of instruction and examination for our diploma course it must be admitted that a curriculum for training the practitioner cannot cope with the special training required for research and academic work. The University courses, as at present constituted, do not appear to meet the case completely. They can claim to demand a higher standard in the basic sciences, and that may be conceded with some reserve, but personally I consider that the time is ripe for revision. The basic sciences should in all cases be of honours standard and I would suggest that honours schools in one major subject should be instituted. I have in my mind, for instance, that, if an honours degree in veterinary science for animal genetics were provided, it would be a step to specialist educa-

tion in what I regard to be a veterinary subject. Professor Leclainche has recently pointed out that veterinary education has suffered in some respects from an excessive medical bias. If more attention had been paid to zootechny, agricultural education would not have been able to trespass in our territory with so much success.

I am not in agreement with the idea that veterinary research can only be carried out by veterinarians, and I am a believer in team work, though for its full appreciation some members of the team should have that training in clinical science required for the diploma which is gained in hospital practice. For that and other reasons it seems essential that instruction for a veterinary degree must be concurrent with instruction for the diploma and cannot be segregated. There is a movement in medical education to provide separate avenues of qualification for research workers. This raises a revolutionary question which is full of pitfalls and very controversial. Any such scheme would appear to be inappropriate to our profession.

Post-graduate instruction must continue to provide training for special work. It is increasing in growth and importance, but there must be some limit to the total curriculum and more elasticity in framing courses of study is desirable to cope in some measure with the manifold difficulties. The research student cannot be expected to be successful in acquiring the range of knowledge required of him unless some way is found to lighten his burden, give him time to think and allow him to look forward to earning his livelihood at a reasonable age.

I have outlined a few of the major problems of our professional education. The detailed work connected with their solution is onerous and responsible, and must be left to those who have special knowledge. A pedantic outlook must not be permitted to over-rule and uninformed interference is dangerous.

A distinguished man of affairs recently stated in public that it was a duty to raise the standard of veterinary education to a University standard. What he meant exactly he did not say, but considering that three Universities in Great Britain already provide degrees in veterinary science he was presumably not referring to academic studies. It can scarcely be claimed that a pass degree at a University, entailing a leisurely course of three years, can claim to be equivalent academically to a five years' course of study in scientific subjects. I agree that the contiguous advantages obtainable in some circles of a residential University are of great educational value. Even so, there are some discriminating parents who select certain academies and colleges where discipline receives more attention. Our teaching Colleges started as private enterprises and have been handicapped in many ways. They should receive the moral and financial support of the State and the public to give them their proper places as national assets.

I will close my remarks by saying that I trust the younger members will not only continue to study the science and art of a fine profession, but take an increasing interest in professional ethics and the advance of education. I feel confident that the profession will gain in strength and influence by making contacts and only lose ground by isolation. Let the rising generation shoulder their responsibility and by their conduct and culture make themselves worthy of their heritage.

EXPORT OF HORSES FOR BUTCHERY

In view of the Exportation of Horses Bill, which was read a second time on Friday of last week, the annual report for 1936 of the International League to Prevent the Export of Horses for Butchery is of particular interest. It states that during 1935 the number of horses exported to the Continent was 2,670, or slightly fewer than for the previous year. The figure has varied little during the four years from 1931, when 6,178 horses were exported. In the four years from 1927 to 1930 the average number was 9,892. By foreign dealers the decrease is attributed mainly to the reduced number of horses in England and to the continuous activities of the International League and other agencies.

Of the trade in Belgium it is stated that a horse which has been imported for slaughter may be sold for further work, even after the quarantine formalities; this means that anything may happen to it after its arrival in Antwerp. As the Act of 1914 and the regulations of 1921 do not apply to the Free State, the export of old and work-worn horses from Dublin to Antwerp is carried on without hindrance. The traffic, though in the hands of only a few dealers, will continue so long as the law allows.

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ARMY VETERINARY SERVICE

London Gazette—War Office—Regular Army

March 5th.—Lt. J. McL. Ross to be Capt. (March 2nd).

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Wiltshire County Council have decided to revise their scale of charges for veterinary inspections of dairy cows. There will be no charge for the inspection of herds of up to 30 cows.

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A discussion on "Some Considerations in the Marketing of Refrigerated Produce" will be opened by Mr. L. B. A. Grace, M.R.C.V.S., at a meeting of the British Association of Refrigeration on the 16th inst.

The Veterinary Record
March 13th, 1937.

Administration of the Milk (Special Designations) Order, 1936, with special reference to Accredited Milk

IT has become only too clear that there is a great divergence in the different counties and county boroughs in the manner in which the Accredited Producers' Scheme of the Milk Marketing Board is being administered. This complaint has been heard from all sides and from all quarters, wherever those interested in milk production meet together, whether in private or in public.

The matter was very well ventilated at the Scarborough Congress in the discussion which followed the paper on the Accredited Producers' Scheme, but despite all that has been said, very little progress has been made so far towards securing uniformity of administration. The farming community continually calls attention to the anomalies which exist and the rather unfair position of some producers who have to pay a levy which in reality subsidises producers in other districts who hold "accredited" licences under conditions which appear to be much below the standard applied in their district. Licensing authorities seem to consider that the standard applied in their own particular area is the only correct one, and practically no effort has been made to co-ordinate the standards adopted by adjoining counties.

With a view to attempting to bring about some form of uniformity of control and administration, a conference was arranged in London in January last under the auspices of the Royal Sanitary Institute. So great was the response of those interested in the conference that the venue of the meeting had to be changed and the Central Hall, Westminster, engaged. About 700 officials, medical officers, veterinary officers, sanitary inspectors, members of local authorities, producers and distributors, attended the meeting, and the representative gathering must have given the greatest possible satisfaction to the organisers of the conference.

One of the problems has always been the number of different officials who are called upon to administer the scheme in the different counties. At the conference there were four opening papers provided respectively by a county medical officer of health, a county veterinary officer, a rural district sanitary inspector and an agricultural organiser. This selection in itself indicates the number of officials who appear to be connected with the scheme. Much of the discussion at the conference ranged round the question as to which official is best qualified to carry out inspection of buildings, equipment and methods of production. Some held that the medical officer should be the sole judge; others contended that the veterinary officer acting in conjunction with the county and district sanitary inspectors was the best combination, whilst there were equally emphatic statements made that the county agricultural staffs were best fitted for these duties. What appeared to stand out most clearly is that far too many subsidiary officials have a finger in the pie and that their number should be reduced. It is possible that some of the alleged lack of uniformity is due in part to the variety of officials who seem to be concerned with the administration of the Order.

It may, however, be argued with no sense of self-complacency, that the veterinary surgeon, by virtue of his training and experience in dairy hygiene and animal husbandry, is thoroughly equipped to administer all the provisions of the Order, and during the discussion this view found considerable support, especially from the producer's standpoint. We most strongly urge that in county areas especially, the administrative control should be vested in the veterinary officer, who should be directly responsible to a joint milk and dairies committee composed of members of the agricultural and public health committees. There must, however, be collaboration with the sanitary authorities and their officers, particularly in the county areas.

Fortunately there was no suggestion at the conference that the clinical examinations necessitated by the Order should be carried out by any person other than a veterinary surgeon, but occasion was taken by the writer of one of the papers presented to the conference to make the statement that in his opinion the veterinary control required in connection with the issue of "accredited" licences did not materially influence the safety of that grade of milk. This view was immediately repudiated by speakers representing the profession. No

claim has ever been put forward by the profession that clinical methods of diagnosis in connection with bovine tuberculosis are perfect, but it can be asserted confidently that these clinical examinations at quarterly intervals give the milk consumer a considerable amount of protection, especially when these methods are supplemented by the biological examination of the mixed milk from the herd, a procedure which is now adopted in a good many districts. In spite of the criticism of veterinary control, it is nevertheless a fact that statistics from several areas show that the incidence of tuberculous infection in "accredited" milk is definitely lower than in ungraded raw milk.

The veterinary profession is not concerned with the financial aspect of the scheme, but it should be our duty to determine what conditions are required for the production of milk of the standard which the Order enjoins, and to see that such conditions are carried out both before and after the licence is granted. It would be a mistake to imagine because clean milk can sometimes be produced under poor conditions, that we should accept such poor conditions as our standard. It has frequently been suggested that the chief cause for complaint is not against those authorities which have set a high standard, but rather against those which have set one too low, or in some cases have not troubled to set a standard at all. Our aim should be to improve matters and encourage better methods of milk production. If milk is to be sold with such a hallmark as "accredited," its method of production must be beyond reasonable reproach. We all know that the most important factor involved is the character and mentality of the producer himself, but as we cannot legislate for character, we must allow conditions of production to be the deciding factor.

If the London conference has done anything to improve and simplify the way in which the scheme should be worked, it will not have been held in vain. The danger is that these conferences, whilst admirable in their intention, so often lead to no practical results. It is known that the Ministry of Health is sending officers to visit each county and county borough to report on the manner in which the scheme is administered, and we hope that this procedure will ultimately be the means whereby uniformity of procedure will be achieved. The new Order has not had a long innings as yet, and we sincerely trust that as time goes on many, if not all, of the difficulties will be overcome.

CLINICAL COMMUNICATIONS

Some Interesting Cases*

E. P. BARRETT, M.R.C.V.S.
Margate

An Unusual Case in a Dog

A visit was made to a nine-months-old Chow dog, which was affected with acute vomiting and intense thirst. A skein of silk had been swallowed four days previously. Castor oil had been given by the owner and silk was passed during the ensuing purgation.

The temperature and membranes were normal. The owner being an elderly woman and the patient suspicious, abdominal palpation was difficult and nothing was detected. For the same reason, the mouth and throat were not examined.

Gastric catarrh was diagnosed and suitable treatment prescribed. The owner was asked to let me know if he had not recovered in two days.

I was not called again until a week later, when I found the dog extremely emaciated, with intermittent vomiting and refusal of all food. Abdominal palpation detected a lump, about the size of a golf ball, which was thought to be a foreign body in the small bowel. An exploratory operation was suggested, with a very grave prognosis.

On opening the abdominal cavity a surprising condition was seen. The lump which had been palpated was found to be arrested in the jejunum, and a cord inside the bowel extended from it forward to the pyloric region, where it appeared to be anchored. The bowel between these two points was rucked up like the sleeve of a coat. During examination the bowel ruptured near the pylorus and it was decided to destroy the animal.

At *post-mortem* examination I found that on the swallowing of yet another skein of silk, one loop had passed underneath the tongue and was deeply embedded in the side of the base of this organ, while the remainder had been swallowed and had passed through the stomach into the intestine, where it had become collected into a hard ball. Peristaltic traction on this drew the anchored strands higher and higher until they cut through the mucosa at the pyloric curvature and became firmly embedded in the submucous tissue.

It seems very probable that had I examined the mouth at my first visit, the loop of silk round the tongue would have been discovered

*Communicated to a meeting of the South-Eastern Division, N.V.M.A., at Maidstone, November 4th, 1936.

and released, when it would have been evacuated in the ordinary way.

It is of interest that the dog never showed any signs of discomfort in his mouth. I questioned the owner carefully on this point.

Distemper in a Kennel

In the spring of 1934 I was called to a three-year-old Dalmatian bitch at a boarding kennel. She shared a kennel with a dog of the same breed and about the same age.

The bitch had been off colour for two or three days. She had a temperature of 102·4°, dysentery, complete inappetence, slight purulent discharge from the eyes, dirty yellowish-brown fluid nasal discharge.

The dog in the same kennel was found to have a normal temperature and no symptoms of illness.

Diagnosis.—Acute bacterial infection, possibly Streptococcus or *B. bronchisepticus*, with virus distemper as a possibility.

The owner wished to leave nothing undone to ensure recovery.

It was considered too late for distemper serum to influence the course of the bitch's illness, but the dog was given 20 c.c. subcutaneously.

The bitch received 5 oz. of 5 per cent. glucose saline subcutaneously, symptomatic treatment and stimulants.

A swab of the nasal discharge was taken and sent to Major Dalling, with a view to determining whether or not virus was present—a matter of considerable importance in a large kennel where further cases may occur.

The dog remained well throughout.

The bitch showed little change in the first 24 hours of treatment—but on the following day appetite returned, though dysentery was still rather alarming. Five days from the appearance of acute symptoms, she had completely recovered and no further developments of any kind occurred. My comment was that undoubtedly it had not been virus distemper and that serum had been wasted on the dog.

Meeting Major Dalling some time later, I repeated this comment to him, and, much to my surprise, he replied that virus was present in the swab and had killed the experimental ferret with typical distemper symptoms.

Although the collection of symptoms was typical of virus distemper, the extremely short period of illness led me to think that I had been dealing with some milder infection. Major Dalling's findings were very surprising to me, but throw a little more light on the vagaries of distemper virus.

X-Ray Examination

Road accidents commonly present unusual features.

An Airedale dog—four years old—after being run over by a car, carried his near fore limb, with swelling and pain at the elbow.

The animal was first brought to me six weeks later. He was still carrying the limb—with an enlarged and immovable elbow joint and advanced muscular atrophy.

An X-ray examination was made and a complete dislocation of the elbow joint was seen.

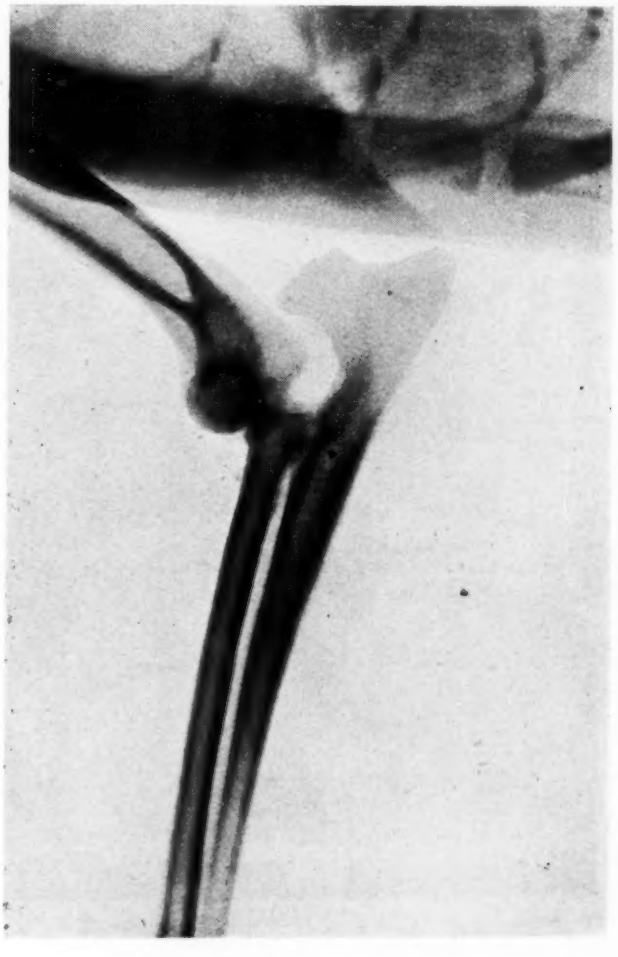
Very firm adhesions had by now, of course, developed—but in view of the fact that the dog was crippled, it was decided to attempt reduction under general anaesthesia.

Considerable force was required and some terrifying rending and tearing sounds resulted—but the adhesions ultimately gave way and the joint was replaced in position.

The paw was strapped back on to the forearm for a week to give time for the joint to settle back in position and the muscles to recover tone.

Passive movement and massage over several weeks resulted in comparative recovery. Although the joint movement was restricted, replacement of natural alignment resulted in muscular recovery and use of the limb with practically no lameness.

The X-ray photograph illustrates the case.



A three-year-old smooth fox-terrier bitch was brought in for examination *re* pregnancy.

At the sixty-third day of gestation there was considerable abdominal distension, development of mammary glands and commencing lactation —but no other sign of approaching parturition. About five days later the abdominal distension subsided and became practically normal in appearance. Although the bitch remained quite fit, it was decided by the owner on the seventieth day after mating to have her examined, and she was shown to me for the first time.

I was confident that I could palpate at least two foetuses. The owner wished to have positive confirmation of this before proceeding with surgical interference. Examination by X-ray showed two well-formed foetuses and a third one, small and partly developed.

Caesarian section was carried out successfully.

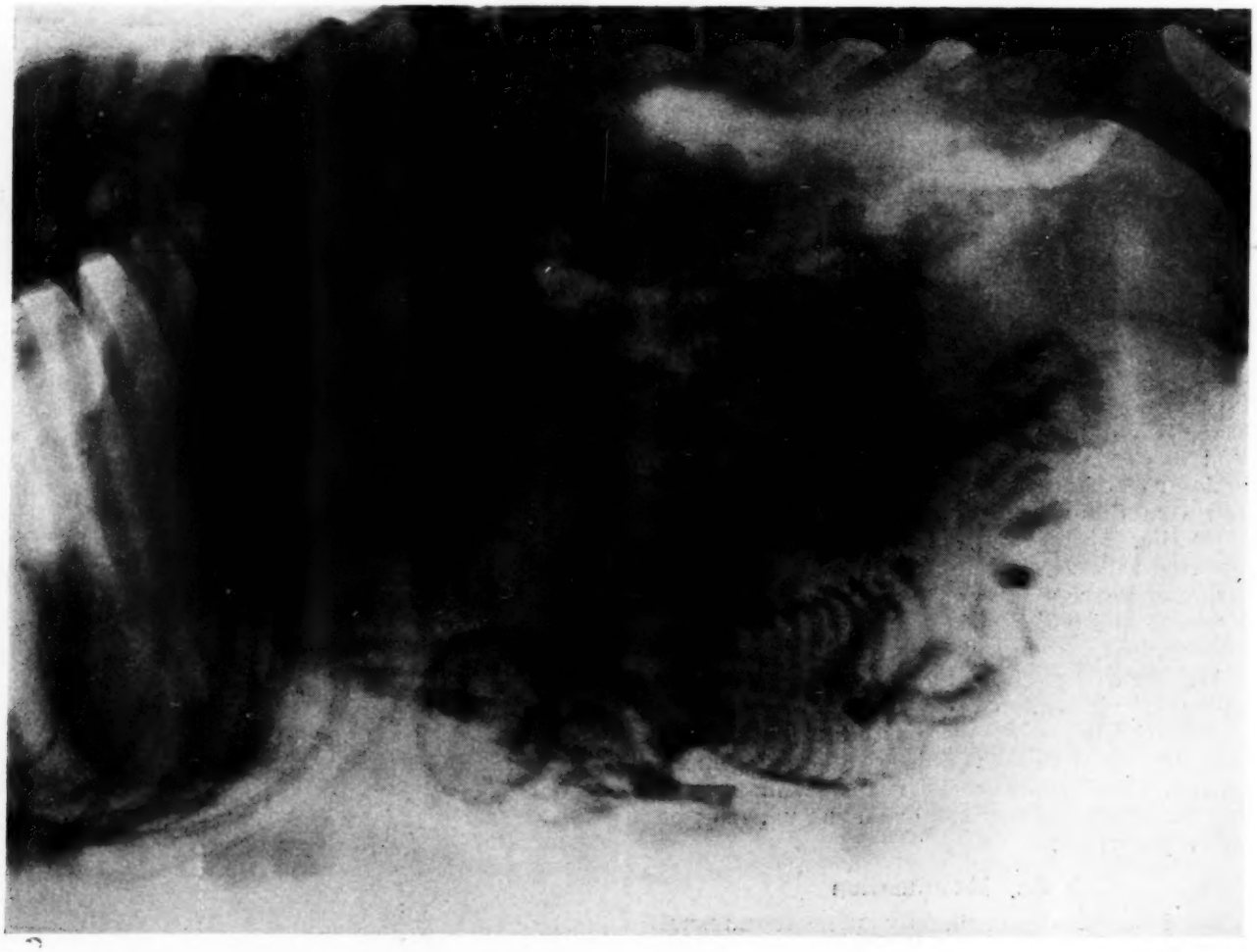
This appeared to be a true case of uterine inertia with collapse of the abdomen due to re-absorption of foetal fluids. A photograph is reproduced in illustration of this case.

Nephritis—or Stuttgart Disease

A three-year-old wire-haired terrier dog had attacks of gastric catarrh lasting 24 hours, recurring several times during a period of three weeks. He was then brought to me with a similar attack and running a temperature varying between 103° and 105°, which was maintained for three days. Appetite now became very capricious—and in a few days was completely lost; vomiting, however, ceased. The breath became very offensive and had a urinous odour, a gluey deposit developed on the teeth and there was acute thirst; the bowels were normal.

The animal was kept alive for a fortnight by forcible administration of half-a-pint of milk with an egg and two tablespoonfuls of glucose daily.

Albumen water was allowed in small quantities frequently. During this period necrosis of the mucous membrane of the lips over the canine teeth occurred, and a small portion of the tip of the tongue necrosed and sloughed, leaving permanent deformity.



Several examinations of urine were made. Specific gravity averaged 1009 and the very faintest trace of albumen was thought to be present.

A sample of urine was sent to Mr. Orr at the Royal Veterinary College and he confirmed the presence of minute traces of albumen. I had diagnosed chronic interstitial nephritis and given a grave prognosis, and Mr. Orr was inclined to agree. One was tempted to diagnose this case as Stuttgart disease, especially with the indefinite albumen findings in the urine, but I do not remember having seen a case which I could confidently diagnose as Stuttgart disease, and I do not think this was one.

The dog now began to recover his appetite gradually, but appeared to be defeating one's efforts by refusing to eat anything but raw meat. Starvation or forcible feeding being the only alternatives, this diet was allowed. There was one relapse during convalescence, with an attack of acute vomiting and intense thirst, but this cleared up in 24 hours, and he has gone forward, until now, three months later, he is in excellent condition, though he has neither the vitality nor the stamina he had before his illness.

One supposes that the kidney condition will progress until a sudden attack of acute uraemia proves fatal.

A similar case is that of a three-year-old racing greyhound, which developed acute thirst, subacute vomiting, urinous smell, severe wasting. Urine S.G. 1005. Albumen present.

Diagnosis.—Chronic interstitial nephritis.

Prognosis.—Grave and hopeless for racing.

The dog was taken home by the owner, kept on a protein-free diet, and allowed to lie about in a paddock. He gradually improved and after two months came back to racing. He was about a second slower over 500 yards, but otherwise seemed very well. During two months after recovery, frequent urine examinations were made and no albumen was found at any time.

I have encountered numerous cases of this disease in dogs ranging from eleven months to old age, and all previous cases have died within a few weeks of the appearance of severe symptoms described in these two cases. These two, I anticipate, will collapse suddenly in the near future.

Mr. C. A. W. Cunningham, Mr. W. S. King, Sir John Moore, Mr. J. Willett and Mr. G. H. Williams, have been appointed to officiate as judges on the occasion of the parade of van horses—an annual event—to take place in Regent's Park on Easter Monday.

ANNOTATION

Some Recent Advances in Equine Neuro-Pathology

Relatively little attention has been paid to the comparative pathology of the nervous system and the results obtained by early workers in this field have been repeatedly reproduced and perpetuated with little or no attempt to confirm or modify their findings. The reasons for this stagnation would appear to be the scant attention given to the exact study of clinical symptoms of nervous diseases, coupled with failure in most cases to follow up clinical observations with a careful *post-mortem* examination which includes both macroscopic and microscopic examination of the central nervous system. Only by carrying out such a correlated study of clinical pathology and pathological anatomy can an accurate knowledge of disease processes be obtained.

A valuable advance in this direction is formed by the series of papers on diseases of the brain of the horse which Holz has published during the last few years, and it may perhaps be convenient to review briefly the most important results of his work.

The so-called "psammoma" which occurs very commonly in relation to the choroid plexus of the cerebral ventricles in horses, and for which M'Fadyean suggested the name "cholesteoma," is probably not a true neoplasm and certainly bears no relation to true psammomata. The latter are well known in human pathology and are rare in animals. They are related to the dura mater. The so-called "psammoma" is probably a mass of granulation tissue built up around aggregations of cholesterol crystals which have been deposited in lymphatic channels in the choroid plexus. Holz[1] describes the finding of foci of cholesterol deposition, bearing a strong resemblance to these growths, in the brain of horses affected with Borna disease. The foci were situated mainly in the corpus striatum and Ammon's horn. It is suggested that a study of their method of formation might throw some light on the pathogenesis of "psammomata."

Epidermal cholesteatomata form the subject of a second paper[2] in which four new cases are described. A search of the literature brought to light only six cases previously described, but the paucity of recorded cases is probably due to failure to carry out detailed examination of the nervous system. The neoplasms grow slowly and the brain fairly readily becomes accommodated to the increase in size. Sooner or later, however, haemorrhage occurs and results in a sudden increase in size of the tumour with the

appearance of acute nervous symptoms. Recovery may take place with partial or complete absorption of the haemorrhage. Histologically, the neoplasms are seen to be enclosed in a capsule of connective tissue containing haemosiderin and haematoidin—evidence of previous haemorrhage. The tumour proper consists of islets of epidermal cells and masses of keratinised epithelium and shows some resemblance to an epithelioma. A high body temperature was a feature of the clinical findings and this was also noted by the author in cases of other neoplasms affecting the brain, and in cases of "psammoma."

In the brain of a horse which had shown apoplectic symptoms during life, Holz[3] found foci of softening which, on histological examination, were found to be due to trophic disturbance following generalised vascular disease considered identical with endarteritis obliterans of man. Another rare condition[4] was the almost complete obliteration of the Sylvian aqueduct by granulation tissue and marked dilatation of the lateral ventricles in a 14-year-old stallion. The condition was ependymitis granularis and consisted in proliferation of the ependymal cells and formation of collagenous connective tissue. In another 14-year-old horse Holz found several foci of calcification in the nucleus dentatus and other regions of the brain and these are considered to have caused the slight brain disturbances observed during life.

In South Germany a variety of conditions are included under the term "Kopfkrankheit" and these are classified by Holz[5] according to their pathology into specific infections, *e.g.*, Borna disease, and apoplectic attacks. In both groups cerebral haemorrhage is the most important factor. In the former group this is due either to the direct action of the virus on the blood vessel walls or to softening of areas of brain tissue consequent on nutritive disturbances. In apoplectic attacks haemorrhage may be due to a variety of causes, such as calcium incrustation of vessels, capillary thrombosis or cerebral tumours.

A very valuable paper dealing with the latency of intra-cranial "tumours" has recently appeared.[6] In it Holz describes ten cases, which are classified as follows:—

1. Intra-cerebral tumours.

   (*a*) Cholesteoma—three cases.

   (*b*) Sarcoma—two cases.

2. Extra-cerebral tumours.

   (*a*) Malignant neoplasm of the ethmoid bone.

   (*b*) Dentigerous cyst in squamous temporal bone with production of an intra-cranial abscess. (The teeth contained within the cyst showed caries: this is of interest as showing that caries occurs in heterotopic teeth and in the absence of the oral bacterial flora.)

   (*c*) Hygroma of the dura mater with secondary haemorrhage.

   (*d*) Haemorrhage at the base of the brain near the optic chiasma—cause not known.

   (*e*) Haemorrhages in the hypophysis cerebri.

It is not possible to describe in detail the clinical symptoms shown in the above cases, but the most important general conclusions are:—

1. The latent period elapsing between the first formation of the tumour and the appearance of clinical symptoms may be very long—even several years. During this time there may occur considerable deformation and destruction of nervous tissue.

2. This is followed by the appearance of acute nervous symptoms, usually those of an encephalomyelitis. A high temperature is a very common finding (up to 104·5° F.). There are usually both motor and sensory disturbances. The nature of the nervous symptoms depends of necessity on the nature and location of the lesion, *e.g.*, haemorrhage in close relation to the optic chiasma gave rise to sudden blindness occurring overnight.

In the last few years, comparative neuropathology has come to occupy its rightful place as an all-important branch of animal pathology. In addition to the valuable papers reviewed here, research workers in the field and in the laboratory have studied such problems as nervous diseases due to filterable viruses (*e.g.*, louping-ill) or to factors as yet unknown (*e.g.*, "sway-back"). Others have described neoplasms occurring in the nervous system which were previously considered very rare or non-existent in animals (*e.g.*, various types of glioma and other brain neoplasms in dogs and horses). The practitioner, also, can make a valuable contribution to our knowledge of nervous diseases if he will carefully record symptoms and, in fatal cases, carry out a detailed *post-mortem* examination; and if, when the nature of the pathological changes is not clear to him, and where there exist no obvious macroscopic lesions which he considers could explain the symptoms observed, he will submit suitable material to a pathologist.

E. G. W.

References

[1]Holz (1936.) *Berl. tierärztl. Wschr.* **52**. 312-314.

[2]Holz (1934.) *Ibid.* **50**. 804-808.

[3]Holz (1935.) *Ibid.* **51**. 768-769.

[4]Holz (1936.) *Ibid.* **52**. 114-116.

[5]Holz (1936.) *Deuts. tierärztl. Wschr.* **44**. 203-204. (Abst. of paper read before Berl. tierärztl. Gesellschaft.)

[6]Holz (1935.) *Ibid.* **51**. 289-295.

ABSTRACTS

[Physiological Aspects of Ketosis in Cows and Ewes, with special reference to Carbohydrate Metabolism. Sampson, J., and Hayden, C. E. (1936.) *Cornell Vet.* **26.** 2. 183-199.]

It has been observed by many authors that a moderate or severe ketosis is present during the course of several diseases of cows and ewes, such as milk fever, post-parturient dyspepsia, lactation tetany and pregnancy toxaemia. The physiological significance of this ketosis has still to be discovered. In this paper an attempt is made to show that a relationship exists between the carbohydrate metabolism and the ketosis found in the above disorders. In man metabolism of carbohydrate is necessary for the prevention of ketosis, but this has not been demonstrated in the case of domestic animals. Starvation only produces a slight ketosis and it would appear that domestic animals possess the ability to avoid ketosis without the direct intervention of metabolising glucose. Several authors have suggested that mineral imbalance is a predisposing factor to ketosis in cows, but there is little evidence to support this contention.

In the present paper data are recorded from 35 cases of ketosis in cows and, whereas no significant disturbance of the blood calcium or phosphorus was revealed, it was found that an *intense* ketosis was usually associated with a hypoglycaemia but that a *moderate* ketosis need not be accompanied by a fall in blood sugar. It should also be mentioned that a hyperglycaemia was occasionally found. Treatment with glucose reduced the amount of ketone bodies in the blood. In the case of ewes it was found that the blood calcium is not disturbed even when a severe ketosis was present and that the acidosis was not due to a deranged calcium metabolism. As in the case of the cow, a hypoglycaemia was frequently associated with ketosis in the ewe.

The authors conclude that ketosis is definitely related to carbohydrate metabolism both in the cow and ewe. It should be noted, however, that, even if we are agreed that the ketosis found in various disorders of cows and ewes is always related to some upset of carbohydrate metabolism, this is no reason to place such different disease entities as pregnancy toxaemia in the ewe and milk fever, post-parturient dyspepsia and lactation tetany in the cow under one classification. This type of classification, which is being increasingly carried out by research workers both in this country and in America, is merely obscuring, rather than clarifying, the aetiological picture in the above-mentioned disorders.

J. S.

[Reproductive Hormone Therapy in Domestic Animals. Hart, G. H., and Cole, H. H. (1936.) *J. Amer. Vet. Med. Ass.* **88.** 1. 12-23.]

Rational therapeutic application of the reproductive hormones must be based on a knowledge of their origin, action and inter-relation. For example, oestrin will bring about the external manifestations of oestrus, but it is *without* effect on the ovary and does not cause ovulation to take place. Clinically, therefore, it will produce the same effect as expressing the corpus luteum, or injecting gonadotropic hormone, but these latter procedures go a step further and result in a new definitive follicle developing, oestrus and ovulation. Oestrin also stimulates the uterine musculature to most marked rhythmic contractions, and it may have a place in causing the evacuation of uterine contents in cases of pyometra. Its other effect of increasing epithelial cell activity in the uterine, cervical and vaginal mucous membranes would tend to overcome inflammatory conditions.

Gonadotropic hormones from the anterior pituitary are responsible for the ripening of the Graafian follicle and ovulation in the female, and the stimulation of the germinal cells in the seminiferous tubules in the male. Such hormones can be obtained in quantity from the serum of mares at certain stages of pregnancy. They are indicated in females which fail to come in heat, but proper judgment in the selection of cases for treatment must be exercised. They have also been found of value in the treatment of impotency in males of any species of mammalia.

Few clinical data are available regarding the use of corporin and prolactin, but it would appear that their application in practice is extremely limited.

N. J. S.

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[The Value of Vaccination with Live Culture of Br. abortus for the Prevention of Abortion. Keylock, H. E. (1936.) *J. Comp. Path. & Therap.* **49.** 4. 350-359.]

The author discusses in a critical manner the advantages and disadvantages of the use of living *Br. abortus* vaccine on a large dairy herd at Shanghai. Elimination of infection by segregation was quite impracticable under the particular circumstances, consequently diagnosis of infected animals by means of the agglutination test was not necessary; thus the fact that vaccination interferes with diagnosis did not matter. Furthermore, all milk was efficiently pasteurised prior to distribution, and all danger of spreading undulant fever was therefore removed. Under these circumstances vaccination was indicated provided it was likely to be successful. In the absence of conclusive evidence regarding the efficiency of vaccination,

living vaccine was administered as an experiment. After its use there was an increase of 6·3 per cent. of full-term calves born, a 4·3 per cent. decrease in abortions, and a 2·6 per cent. decrease in the number of cases of retention of the placenta. It is considered that differences as small as these were due to chance and cannot be credited to the vaccine. The incidence of abortion and sterility amongst the young heifers following upon vaccination was considerably higher than it had been in the years before vaccination was attempted. In view of the foregoing results, vaccination of this particular herd will not be continued.

E. J. P.

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[The Isolation of Brucella abortus from Milk of Cows with Negative Blood Reactions to the Agglutination Test. Doyle, T. M., and Beckett, F. (1936.) *J. Comp. Path. & Therap.* **49.** 4. 320.]

The authors report on the examination of a large number of udder samples of milk for the presence of *Br. abortus*. Blood samples from the same cows collected at the same time were also examined for specific antibodies. Milk samples from 309 cows showing negative agglutination reactions were examined and only two contained *Br. abortus*. Thus only 0·64 per cent. of these non-reactors were actually excreting virulent infection; it would therefore appear that the danger of non-reactors spreading infection is no serious element in the eradication of contagious abortion. Nevertheless, the possibility of such cows existing should always be borne in mind, particularly when eradication schemes based upon the agglutination reaction break down for no accountable reason. An incidental item arising from the investigation was that the incidence of contagious abortion in 17 dairy herds containing 684 cows and situated in southern England was 35 per cent. [The authors did not follow strictly the technique advised by the Agricultural Research Council for carrying out the agglutination test, nor was antigen similar to the A.R.C. antigen used for the test; consequently, the foregoing results cannot be compared with those arising from the widespread eradication schemes sponsored by this body.]

E. J. P.

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[The Effect of Brucella abortus Infection of the Udder on the Quality of Milk. Bryan, C. S., and Meyer, D. B. (1936.) *J. Amer. Vet. Med. Ass.* **89.** 2. 199.]

Milk secreted by a cow with *Br. abortus* infection of the udder is of poor quality as compared with milk from animals having normal udders. Considering average figures for large numbers of cows, milk from a Brucella infected udder reduces methylene blue more readily, has a higher total bacterial count, contains more leucocytes and has a higher chloride content, whilst the hydrogen ion concentration tends towards alkalinity. The aforementioned differences between normal and "Brucella" milk are small, but milk from cases of streptococcal mastitis, on the other hand, shows all these differences to a much more marked degree.

E. J. P.

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[Results of Passage of Human and Monkey Strains of Brucella melitensis through Pregnant Heifers. Wilson, D. E., and Evans, S. A. (1936.) *J. Comp. Path. & Therap.* **49.** 4. 336.]

The apparent mutation of a typical strain of *Brucella melitensis* (*i.e.*, human strain, the cause of Malta fever) to a typical strain of *Br. abortus* is reported. This mutation was effected by passage through a single healthy pregnant heifer. Attempts to repeat the mutation failed. The various strains used and isolated were typed both locally in East Africa and by independent workers in London. The typing is, therefore, above criticism. All reasonable effort was made to exclude the possibility that the heifer was suffering from a latent infection of *Br. abortus*, but this possible explanation of the phenomenon must be borne in mind.

E. J. P.

REPORT

Hannah Dairy Research Institute

REPORT FOR THE YEAR ENDING MARCH 31st, 1936

The seventh annual report of the Hannah Dairy Research Institute records the work in progress during the year ending March 31st, 1936.

Under the heading of Biological Research an account is given of an investigation into the protein requirements of dairy cows and the utilisation of home-produced feeding-stuffs. Little or no difference was found between the proteins of fresh grass, ensiled grass (using A.I.V., molasses and ordinary silage) and artificially dried grass, whilst spring was superior to autumn grass as a source of protein for milk production. The Institute now possesses two types of artificial grass-drying plant and extensive trials of the methods on a commercial scale are in progress.

A series of experiments on the nutritive value of raw and processed milks and of whole milk

and separated milk (raw and dried) as the sole ration for calves is described. A study is also reported of the variations in the composition of bovine blood as a result of changes in the level of feeding and also as a result of salivary secretion.

In 1929, under the auspices of the Medical Research Council, an investigation into the eradication of tuberculosis from dairy cattle was initiated. In the report published in 1933 it was shown that with the incentives of free tuberculin testing and advice, 28 herds of the 30 comprising the experimental area had made substantial progress. During the past year all these herds have been re-tested in order to ascertain the permanence of the previous results and their influence on the policy of neighbouring farms. Of the 30 original herds, 24 are now free from infection, 14 being licensed under the Milk (Special Designations) Order and eight being attested under the Attested Herds Scheme; one further herd is practically free from infection. In the immediate neighbourhood eradication has been adopted to a remarkable degree. Of 192 herds within a five-mile radius of the area, 17 are licensed and attested, 31 are licensed and 16, although unlicensed, are free from reactors—*i.e.*, 64 herds, or one-third of all within a five-mlie radius, are free from infection. The value of segregation methods for the control of contagious bovine abortion and mastitis is also being investigated. Improved methods for the laboratory diagnosis of mastitis are being studied.

On the side of technical research a comprehensive survey of the design and operation of existing pasteurising plants has been issued in bulletin form. The presence of tubercle bacilli in pasteurised milk was found to be associated with gross defects not only in design of the plant concerned but also in its operation. Valuable recommendations for securing greater efficiency throughout the entire pasteurisation process are made. A study of the modified methylene blue test as an alternative to the plate count for the bacteriological grading of milk is reported in which many controversial factors are given particular attention. Many defects in processed milk products have been investigated, such as those due to contaminating organisms (comprising 80 pure cultures) in evaporated milk and canned sterilised cream. Subjects of special study have been bitterness in canned cream and black discoloration in canned cream. In this connection it is noteworthy that the Institute now possesses a large range of equipment for the manufacture of canned milk products which is of great value in all problems connected with the manufacturing dairy industry.

A special investigation has been commenced dealing with the consumption of milk by children of school age in the year 1935—*i.e.*, approximately at the beginning of the Milk in Schools Scheme. It is intended by repetition of the study at a later date to assess the permanent value of the operation of this scheme.

S. J. E.

ADVERTISED VETERINARY MEDICINES AND TAXATION

In the recently-issued report of the Select Committee on Medicine Stamp Duties (H.M. Stationery Office, 3d.) is is stated that evidence was heard on behalf of medical herbalists and of makers of veterinary medicines. The committee is of opinion that herbal remedies should conform to the law relating to medicines generally, but that animal medicines, at any rate for the present, should continue to be exempt from duty, except when advertised for the relief of human ailments or bodily conditions. The suitability for taxation of advertised veterinary remedies might well be considered, while preserving the freedom from liability of all remedies dispensed by veterinary surgeons.

Interesting figures were given to the committee regarding the turnover of the proprietary medicine trade. The retail turnover of the members of a large association of important manufacturers was stated to be £13,500,000. It was further suggested that proprietary medicines manufactured apart from these would bring the total turnover of the trade to at least £28,000,000. This figure includes the sales of many preparations at present subject to exemption. If a somewhat more conservative estimate of the unknown element were accepted, it would appear that the annual turnover might reach the figure of £20,000,000 in which case a duty of 16⅔ per cent. would yield approximately £3,300,000 in the event of the abolition of many existing exemptions. These figures, though necessarily based on estimates, gave some indication of the revenue that might be expected from such a duty. The addition of articles other than proprietary medicines would add to the yield.

Faith in Useless Remedies

The committee has endeavoured to limit enquiry to the terms of reference, which it has interpreted as precluding it from any departure from the fiscal aspect of the question. Strong opinions were, however, expressed by certain witnesses that some form of control of the medicine trade was desirable to safeguard the public from fraudulent exploitation. Authoritative statements were made to the effect that people, largely the poorer and less well-educated, spend more money than they can afford on remedies of little or no efficacy, with an accompanying indirect danger to health as a result of their not seeking medical or surgical treatment in time. Though the committee has reason to believe that matters are not so bad as they were, it is strongly of opinion that the appeal to fear, which is the underlying motive of a large number of advertisements, not only of medicines in the strict sense but of other articles, is psychologically harmful.

Should control of the trade in medicines and appliances be deemed desirable for the protection of the public, the committee believes that the best method of achieving this would be a system of examination and registration of all advertised medicines and appliances.

N.V.M.A. DIVISIONAL REPORTS

Central Veterinary Society

Now that the wellbeing and milk-productivity of the dairy cow have become recognised as matters of major importance from the standpoints both of sociology and public health, it is no matter for surprise that a metropolitan veterinary society should devote an evening to the consideration of such a subject as "The Principles of Cow-Feeding," particularly as they were so fortunate as to secure for its presentation an authority of world-wide repute in the person of Mr. James Mackintosh, of the National Institute of Research in Dairying.

A good attendance at the meeting in question, which was held at the Conway Hall, Red Lion Square, W.C.1, on February 4th, 1937, was evidence of the interest aroused by Mr. Mackintosh's visit, and the President (Professor J. G. Wright) was accompanied by the following Fellows and visitors: *Fellows*—Messrs. L. S. Balls, W. Brown and H. E. Bywater (Hon. Secretary), Captain H. S. A. Dunn, Dr. J. T. Edwards, Mr. C. Formston, Lieut.-Colonel H. Greenfield, Major T. Hicks, Messrs. Herbert King, H. C. P. King and N. S. King, Dr. J. McCunn, Professor W. C. Miller, Mr. C. W. Ottaway, Major G. E. Oxspring, Messrs. W. Perryman, J. W. Pritchard and G. W. Searles, Major R. S. Stalker, Mr. J. S. Steward, Captain R. J. Stow, Mr. P. M. Sutton, Miss O. Uvarov, Mr. S. B. Vine, Captain P. W. Walker, Major G. Williamson, Professor G. H. Wooldridge and Dr. W. R. Wooldridge; *Visitors*—Mr. James Mackintosh, Dr. Blum and Dr. Jenyamin, Messrs. J. D. Blaxland, S. J. Edwards, J. Francis, W. Foulston, W. Kirk, L. Pitcher and N. J. Scorgie.

Consideration of the minutes of the previous meeting was deferred, as they had not yet received publication.

Obituary.—On the call of the President, the meeting stood in silent tribute to the memory of Miss Aleen Cust, of Lyndhurst, and Captain Arthur Fowler, of Haslemere—Fellows of the Society whose deaths had taken place since the January meeting. Captain Fowler, to their deep regret, had succumbed to injuries received in a motor accident, said the President. Miss Cust was a lady of great eminence in the profession in that she was the first qualified woman veterinarian.

It was agreed that a message of sympathy be sent to Mr. Henry Gray, who had been seriously indisposed, expressing the hope of the Fellows that a complete and early recovery would be made.

Correspondence.—The following items of correspondence were read by the Hon. Secretary: (1) From Mr. Gerald Gould, junr., Mr. J. W. H. Holmes, Mr. J. W. McIntosh and Major-General Sir John Moore, apologising for their inability to attend the meeting; (2) from Mrs. Fowler, returning thanks for the action of the Society in being represented at her husband's funeral and for sending a floral tribute; (3) from Major Hamilton Kirk, thanking the President and Fellows for a letter of condolence sent him on the death of his father.

Nomination.—Mr. N. J. Scorgie, of the Royal Veterinary College, was nominated for Fellowship of the Society, being proposed by Dr. McCunn and seconded by Captain Scott Dunn.

MORBID SPECIMENS AND CASES OF INTEREST

Mr. H. C. P. King exhibited a specimen illustrative of comminuted fracture of the right metacarpals. The horse was a six-year-old gelding, the subject of a recent cruelty charge. The animal fell suddenly lame and the man in charge stopped, inspected the foot and decided to proceed. This he did until he was stopped by a police officer and charged with cruelty. There was, as would be seen from the specimen, a pre-existing ostitis, and this was possibly a case of spontaneous fracture due to muscular contraction.

Mr. Pritchard said that within a few minutes of giving a 45 minim dose of taenalin to a setter, 18 months of age and weighing about 60 lb., vomiting of so violent a nature set in that he feared for the animal's life. After a while he gave it chloretone and the dog seemed to recover, but he had to keep it on the premises the whole day. He thought he should point out the possibility that such an alarming effect might be produced by giving a dog the ordinary dose, per lb. body weight, of taenalin, though it would be noted that in this instance the dose was on the "safe" side.

Professor Wooldridge expressed great interest in the case of comminuted fracture of the metacarpals recounted by Mr. King, saying that he could not remember having seen a case like that that could be attributed to muscular contraction. It did not seem that there could be sufficient purchase of the muscles to produce a fracture in that situation, though it was otherwise with femoral fracture. It would have been interesting if they could have been given more detail as to the working of the animal up to the time when it was noticed lame. He was not prepared to suggest what was the cause of the fracture.

In respect to Mr. Pritchard's case of violent vomition and temporary collapse caused by the administration of an ordinary dose of taenalin, he thought that was altogether a case of idiosyncrasy. To a dog of that weight and size he would have been prepared to give a larger

dose, and if an error was made at all in this instance it was on the side of caution.

The President observed that, while thanking Mr. King for bringing along that interesting specimen, he also would question his suggestion that it was a case of spontaneous fracture due to muscular contraction. There were no muscles attaching in the near vicinity of that lesion and it would appear more likely that it was due to unco-ordinated movement. What he thought was amazing was the fact that the haulier should continue working the horse with a fractured metacarpus, and it would be useful if Mr. King could tell them just what was the degree of lameness and the state of the animal.

With regard to Mr. Pritchard's communication concerning the use of taenalin, they had for years been dependent upon the agent as a taeniafuge in the dog and cat. It was safe, and to a degree effective, provided that the animal retained the dose. His experience, however, was that about 40 per cent. of cases vomited and then results were very uncertain. He understood that taenalin was an alcoholic extract of areca nut, and the anthelmintic action of the alkaloid arecoline was well known. It was Ross, of Sydney, who first studied this action. The point of interest was, was the vomiting the result of direct gastric irritation, was it due to stimulation of the parasympathetic nerve endings, or to direct stimulation of the vomiting centre? Using arecoline hydrobromide by the mouth, vomiting occurred in a similar percentage of cases. An interesting point, in his mind, was the size of the dose the dog was able to withstand, especially when one recalled the severity of the drug's action in the horse. The accepted taeniafuge dose was one-quarter to one-half a grain given by the mouth. He had a record of a case in which an Alsatian dog had been given 1 grain subcutaneously; whilst it produced most violent purgation the animal quickly recovered. No doubt the great anatomical differences between the alimentary canals of the horse and dog explained this variation.

In reply to Dr. Edwards, the President said that he supposed that the active principle of taenalin was arecoline.

Dr. Edwards observed that he had not realised hitherto that arecoline had any other effect than the stimulation of peristalsis. He never knew before that it had any direct toxic effect on the parasite.

Professor Wooldridge said that it was proved beyond any doubt that arecoline itself was a very effective taeniacide—whether arecoline was the only active principle in areca nut was another story. With regard to the arecoline action, he was not at all satisfied that the vomition which occurred when taenalin was given was of the nature of a complete vomit in a large number of cases. In many cases vomiting was delayed and there had been brought up a red-stained, frothy material, certainly not containing anything like the dose of taenalin that had been administered—and it had occurred to him that the vomit was not from the stomach but was mainly froth from the pharynx. In many cases the taenalin had been retained in spite of that retching and vomiting of frothy material, and taeniafuge action had followed quite satisfactorily.

The President pointed out that practitioners had been using arecoline hydrobromide in dogs for a matter of 13 years. Attempts were made to overcome vomiting by combining the agent with chlorbutal (chloretone), but the combination was not very successful, due, no doubt, to the different solubilities of the two substances. Ross had recommended that the animal be exercised immediately after the dose, with the head held high. He found that the minimum lethal dose was about 12 times the effective taeniafuge dose.

Professor Wooldridge said that he did not regard taenalin as in any sense a crude preparation; it was a proprietary one and its actual composition was not quite clear. It was a rather nice preparation and it had served the profession very well in the past and many of them were still using it and would be prepared to continue to use it under suitable circumstances.

Mr. N. S. King observed that there were other arecoline derivative preparations marketed by reputable firms. One, which he had been using for a long time with great success, was very easy to administer and rarely produced vomition afterwards, while it had the great advantage that the patient need not be starved previously.

Dr. McCunn supported the view that the dog which was the subject of Mr. Pritchard's observations possessed an idiosyncrasy to taenalin.

Paper.—The President now rose to say that, as time was passing quickly, they must get on to the main business of the meeting, and that was to hear an address from Mr. James Mackintosh, Chief of the Animal Husbandry Department of the National Institute for Research in Dairying, at Reading. First of all, however, he would extend to Mr. Mackintosh a very cordial welcome. (Hear, hear.)

Before he called upon Mr. Mackintosh, he desired to say that they had a number of visitors who had come from a great distance, and he would extend a very special welcome to Mr. S. J. Edwards, of the Hannah Dairy Research Institute. He expressed the hope that Mr. Edwards would see his way clear to take part in the discussion. (Hear, hear.) He desired also to extend a very hearty welcome to two Continental veterinarians who were at

present resident in London and who were with them that evening. He referred to Drs. Blum and Jenyamin, of Germany.

Mr. James Mackintosh now addressed the meeting on "The Principles of Cow-Feeding," being heard with much interest and appreciation. The discussion on the address, which was ably opened by Professor Miller, was very well sustained and evoked from Mr. Mackintosh a most informative reply. [Mr. Mackintosh's address, and a report of the discussion and reply, are reproduced at the commencement of this issue.—*Editor.*]

Vote of Thanks.—Mr. Mackintosh having concluded his reply, the President said that he would like, from the chair, to propose a most hearty vote of thanks to him for coming there that evening and going to such great trouble to give them such an excellent address, from which so good a discussion had arisen.

The vote of thanks having been accorded with acclamation, Mr. Mackintosh, in acknowledgment, said that it had been most helpful to him to listen to their point of view on what he regarded as one of his topics.

A similar tribute to the President for his conduct of the proceedings terminated the meeting.

H. E. Bywater, *Hon. Secretary.*

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Royal Counties V.M.A.

ANNUAL MEETING AND DINNER AT READING

The annual general meeting of the Royal Counties Division, N.V.M.A., was held at the Caversham Bridge Hotel, Reading, on Friday, January 22nd, 1937. The President, Colonel G. K. Walker, occupied the chair and the following members were present: the President of the Royal College of Veterinary Surgeons (John Willett, Esq.), Messrs. N. S. Barron, H. Bell, Captain R. E. C. Bullen, Mr. P. Crosfield, Major Dunkin, Major J. J. Dunlop, Lieut.-Colonel H. Greenfield, Major R. C. G. Hancock, Major W. H. Kirk, Mr. J. W. McIntosh, Mr. G. P. Male, Lieut.-Colonel P. J. Simpson, Messrs. F. W. Willett, R. A. Willett and Professor Wooldridge. Mr. Robert Breakspear, President of the Berkshire Branch of the Pharmaceutical Society, attended as a visitor.

The minutes of the last annual general meeting, having been published in the *Veterinary Record*, were taken as read and signed accordingly.

Apologies for absence were received from Messrs. J. H. L. Addis, A. J. Baxter, J. Bell, T. A. R. Chipperfield, Captain H. B. Collet, Captain J. A. Craft, Captain J. R. Hewer, Messrs. Tom Lepper (Mr. Tom Lepper also apologised for Major Harry Lepper, who was seriously ill), E. S. Paterson, H. C. Shingler, Major F. J. Taylor (on account of illness), Captain W. K. Townson and Captain S. Villar.

Correspondence.—(1) From the Royal Sanitary Institute, inviting the Association to send representatives to a meeting which was being held at the Central Hall, Westminster, on January 28th, 1937, to discuss the working of regulations in connection with "accredited" herds, and how they could be made more uniform throughout England and Wales.

The Council had previously recommended Captain W. L. Little's name, but as it was thought that more than one member should attend the meeting, Messrs. G. P. Male and F. W. Willett were also appointed to represent the Association (travelling expenses to be borne by the Association).

(2) From the Royal Sanitary Institute, inviting the Association to appoint delegates to attend the Royal Sanitary Institute Congress, which is to be held in Birmingham in the summer. It was decided to postpone the appointment of a delegate until the spring meeting.

(3) From the National Horse Association, asking for a renewal of the Association's subscription of one guinea to that body. It was agreed that this subscription be renewed.

(4) From the Hon. Secretary of the Victoria Veterinary Benevolent Fund, acknowledging receipt of £5, which was the amount collected in the box at the quarterly meetings of the Association during the year 1936.

(5) From the Laboratory Director of the Clinical Research Association, asking if any member of the Association would be willing to publish an article in the *Journal of Clinical Research* on the question of the transmission of *Brucella abortus* infections from animals to man. The writer mentioned that it was not uncommon in his laboratory, when examining human blood samples for typhoid and paratyphoid, to find that the sample gave an agglutination to *Brucella abortus*, and the origin of the infection, to them, was somewhat obscure. For this reason he thought that readers of the *Journal of Clinical Research* would welcome an article on this subject.

As Professor Wooldridge's name was mentioned in the letter, the President asked him if he would further enlighten the members as to what was required of them.

Professor Wooldridge said that he could not tell them much more than they already knew. Dr. Ralph certainly had mentioned the subject to him and he (Professor Wooldridge) had referred to the work which had already been done by other research workers, particularly

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Dr. Wilson at the Folkestone Congress. Professor Wooldridge added that he had advised Dr. Ralph of the date of this meeting and had suggested that a letter such as had just been read might meet with some response.

After some discussion it was decided to advise Dr. Ralph to write a letter to the *Veterinary Record*. If published in the *Record* it would be as effective as a circular letter.

Nomination for Election to Membership.—Mr. R. M. Davidson, Chief Veterinary Officer of Berks., was nominated by Mr. H. Bell, seconded by Mr. G. P. Male.

Election of Honorary Associate.—Captain Sydney Villar was unanimously elected an Honorary Associate on the proposition of Mr. John McIntosh, seconded by Mr. G. P. Male. The President intimated that a letter had been received from Captain Villar apologising for inability to attend owing to the fact that he was convalescing from an attack of influenza, and saying how very delighted he was at the prospect of being elected an Honorary Associate.

Balance Sheet.—Mr. John Willett said that, speaking as Hon. Auditor, he would like to say that the financial affairs of the Association were in a very healthy state, and he desired to move the reception and adoption of the balance sheet. This was carried.

A very hearty vote of thanks was passed to Mr. Willett for the trouble he had taken in auditing the accounts.

Place of Next Meeting.—It was decided, on the proposition of Lieut.-Colonel P. J. Simpson, seconded by Mr. J. Willett, to hold the spring meeting in Aylesbury.

Any Other Business.—Major H. Kirk remarked upon the fact that 61 of the 70 members of the "Royal Counties" were members of the "National." "Surely," said Major Kirk, "that is a record—could not something be done to induce these nine members to join the National?"

The Hon. Secretary said that these members had all been written to in an effort to get them to enter into membership of the "National," but although one member had fallen in with the suggestion and had become a member of the N.V.M.A., the others had remained obdurate.

Mr. Bell added, in this connection, that a notice of alteration of rules should have appeared on the agenda that day, but through an oversight on his part had been omitted. The new rule, which had been discussed at a previous meeting, was to the effect that any new member joining the Association must be a member of the "National."

President's Address.—The President (Colonel G. K. Walker) now delivered his address from the chair, which was heard with much appreciation. Colonel Walker commenced by thanking the members of the Royal Counties Veterinary Medical Association for the honour they had conferred on him in electing him to the office of President. He was very gratified by their confidence, which he should endeavour to justify by all the means in his power. He was very pleased that he was to have the guidance and help of Mr. Horace Bell as Hon. Secretary and Captain Bullen as Hon. Treasurer.

After making the speech which is reproduced elsewhere in this issue of the *Veterinary Record*, the President concluded by expressing the confident hope that he would be accorded the support of all the members during his year of office, and by voicing their gratitude to the retiring President, Major Dunlop.

Mr. J. Willett proposed a hearty vote of thanks to the President for his address. Mr. G. P. Male seconded, adding that though they were not permitted to discuss the address, he was in complete agreement with many things the President had said, and he (Mr. Male) thought that a lot could be done by the utilisation of the "National" scheme.

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The Annual Dinner

For the first time in its history, the annual dinner of the Royal Counties Veterinary Medical Association was graced by the presence of ladies, when it was held at the Caversham Bridge Hotel, Reading, on January 22nd, 1937, following the meeting the proceedings of which are recorded above.

Colonel G. K. Walker, C.I.E., O.B.E., V.D., was in the chair, and the members and their guests who sat down to the dinner were: Colonel and Mrs. G. K. Walker, Mr. and Mrs. A. E. Breakspear, Mr. and Mrs. J. Bell, Mr. and Mrs. H. Bell, Mr. N. S. Barron, Captain and Mrs. Broome, Dr. and Mrs. Bullock, Captain R. E. C. Bullen, Mr. and Mrs. B. G. Catmur, Mr. and Mrs. Curtis, Mr. and Mrs. I. R. R. Coleman, Major and Mrs. J. J. Dunlop, Major and Mrs. G. W. Dunkin, Lieut.-Colonel and Mrs. H. Greenfield, Mr. and Mrs. H. Gooch, Major and Mrs. R. C. G. Hancock, Dr. and Mrs. Kon, Captain W. L. Little and guest, Mr. J. W. McIntosh and Mrs. Nickinson, Mr. and Mrs. G. P. Male, Mr. and Mrs. N. P. Male, Professor Neville (Dean of Faculty of Agriculture, University of Reading), Mr. Richardson and guest, Lieut.-Colonel and Mrs. P. J. Simpson, Mr. and Mrs. Thimbleby, Alderman A. Upson and Miss Upson (Mayor and Mayoress of Maidenhead), Mr. J. Willett (President, Royal College of Veterinary Surgeons) and Mrs. Barrett-Stennett, Mr. and Mrs. R. A. Willett, Mr. and Mrs. F. Willett and Professor Wooldridge.

The receipt was announced of apologies for absence from the President of the N.V.M.A. (Captain R. Simpson) and Mrs. Simpson, and

the Hon. Secretary, N.V.M.A. (Captain J. R. Rider) and Mrs. Rider.

The health of the King having been toasted, Alderman A. Upson, J.P., Mayor of Maidenhead, proposed "The Royal College of Veterinary Surgeons, coupled with the name of the President, Mr. J. Willett." His Worship, in the course of a witty speech, observed that he had literally been called upon at the last moment to propose that toast, and not liking to speak on a subject about which he knew very little, had spent some time that afternoon with a dictionary and encyclopaedia. He had found them both most useful and was particularly interested to find that the word "vet." had its roots in the word "vat"—well, of course, they would allow that to stand without comment. (Laughter.) It was interesting to note that their Charter was granted in 1844 and to see how their profession had gradually evolved from such small beginnings. Since 1844 they had had seven other Charters granted—a remarkably short space of time—and this revealed in some measure the amazing growth of the veterinary profession. He congratulated them on obtaining their Charters so rapidly. The Charters in very early days were granted by the Kings of England when they found themselves hard up, and they were a good way of making money. A king would note that a certain town had not a market day and would suggest to them that they might like a Charter for one at the inconsiderable fee of 500 guineas. They in the veterinary profession, however, had not obtained their Charters in that manner but applied for the necessary powers to extend their work as the time came along. The speaker quoted the terms of the first Charter and noted that a wide sphere of labour was covered by it. He was especially interested to note the growth of the side of their work dealing with exploration and research, for without research no profession of that nature could make progress. The further they advanced the more they would find the need for research work: with animals as with humans—the more one knew the greater was the unknown. The recognition and conditions of their calling were contained in their Charter. In concluding, he could not help expressing the wish that one day it might be possible for some sort of college to be formed for the training of town councillors in their duties.

Mr. J. Willett (President, R.C.V.S.), responding to the toast, said that the Royal Counties Association, to which he belonged, appeared to him to be a nursery for members of the Council of the Royal College, and also Presidents. They had there that evening two Past-Presidents and they had their President-elect in Colonel Simpson, in addition to members of the Council. He believed that the number of members of the Council belonging to the Royal Counties Association was 12 out of a total of 36. They had realised a long time before the general public had that they were members of a scientific profession, and they had travelled a long way from the old farrier and horse leech to the veterinary surgeon of the present day—as far as from the old barber-surgeon and apothecary to the physician.

Mr. Willett went on to outline some of the duties of the Council and said that the Examination Committee had embarked on a five years' course, in connection with which they had Professor Buxton to thank for a great deal in bearing the brunt of the work. He must say that the five-year students were showing greater promise than the four-year students and were passing their examinations to a better degree: whether they would make better practitioners remained to be seen.

The Registration Committee, continued Mr. Willett, had many difficult things to decide, particularly from the non-professional side. They were up against a real difficulty in dealing with the clinics run by persons who were not veterinary surgeons. Unfortunately they were unable to touch them unless those running them called themselves veterinary surgeons or used such title as to lead the public to believe that they were veterinary surgeons, and the country was being flooded with these clinics.

Dealing with the work of the Finance Committee, Mr. Willett stated that the activities of the College had grown so much that they had outgrown their accommodation. Particularly striking had been the growth of the Library. He was happy to say that the College was now in a better financial position than it had been for a long time and he hoped it would continue to thrive. That could not be expected unless they had a careful Treasurer, and he felt that they could not have anyone who better fulfilled this condition than did Colonel Simpson.

Mr. Willett added, in conclusion, that he, as President, had been honoured with an invitation from the Earl Marshal to represent the R.C.V.S. and to be present at the Coronation Ceremony in Westminster Abbey. (Applause.)

Dr. F. Bullock, the Registrar of the Royal College, in a characteristically witty vein, gave the toast of the Royal Counties V.M.A., coupled with the name of the President. After chaffing the Secretary, he referred to the speech of the President of the Royal College and said that 50 years ago the question of the College building was referred to at meetings of the Royal Counties. He hoped that history would not repeat itself, for on the former occasion the reason for the rebuilding of the College premises was that the roof had fallen in and the Secretary had been nearly drowned in his bed. (Laughter.) The contribution of the Royal

Counties to the College building was a stained-glass window. In coupling the name of Colonel Walker with the toast, he congratulated the Society and Colonel Walker on his promotion to the Presidency, and referred to the great work of Colonel Walker as Principal of the Punjab Veterinary College, which was now recognised to be the finest Veterinary College in Asia. Colonel Walker was a member of the Council of the R.C.V.S. and a very active member of the Standing Committees. Such a training was an excellent preparation for the Presidency of the R.C.V.S., to which no doubt in due course Colonel Walker would attain. (Applause.)

Colonel Walker (President, R.C.V.M.A.), responding, said that they welcomed the presence that night of Dr. and Mrs. Bullock. They all knew full well the work that Dr. Bullock had done for the profession, and he had always admired that work. To the ladies present he would like to stress the importance of the Royal Counties Association, which had the effect of bringing the veterinary surgeons of the district together to discuss serious matters which vitally affected their welfare, and he hoped that the Association would go on from good to better. He concluded by thanking Mr. H. Bell, the Secretary, for the arrangements he had made in connection with that very successful evening.

The toast of "The Guests" was proposed by Mr. N. S. Barron and felicitous response was made by Miss Upson, Mayoress of Maidenhead, and Captain Broome, of the Ministry of Agriculture.

The enjoyment of the evening was greatly enhanced by the musical contributions of Mrs. Gallacher, Mr. John Cotton and Major Hancock.

H. Bell, *Hon. Secretary.*

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South Eastern V.M.A.

MEETING AT MAIDSTONE

A meeting of the South-Eastern Veterinary Association was held at the Royal Star Hotel, Maidstone, on November 4th, 1936. The President, Mr. F. Crowhurst, occupied the chair and the following Fellows were present: Sir Frederick Hobday, Messrs. E. P. Barrett, W. P. Blount, C. Crowhurst, F. A. Crowhurst, A. T. Crowther, H. Scott Dunn, E. Ebbetts, F. C. Gillard, W. D. Halfhead, H. P. Hogben, E. Wemys Morton, C. W. Perrin, J. W. Pritchard, C. Roberts, A. Spicer, A. Thomson, S. B. Vine and T. Dalling (Hon. Secretary). Major C. Davenport, Dr. C. L. Oakley and Captain J. V. Tevlin were also present as visitors.

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The minutes of the last meeting were signed as correct.

Obituary.—It was reported that a Fellow of the Society—Mr. E. Morgan—had died recently. The meeting expressed its sympathy and the Secretary was instructed to write a letter of condolence to Mrs. Morgan.

N.V.M.A. Congress.—The Secretary reported that an invitation had been received from the N.V.M.A. requesting that two delegates be sent on November 5th to Bournemouth to represent the Society on the Provisional Committee in connection with the 1937 Congress. Mr. A. Spicer and the Hon. Secretary were nominated for this duty.

Society's Silver Jubilee.—The President drew attention to the fact that in 1937 the Society would attain its Silver Jubilee and asked that a committee be formed to make arrangements for a suitable form of celebration. A committee consisting of the President, Hon. Secretary, Messrs. C. Crowhurst, H. P. Hogben, L. P. Pugh and S. B. Vine was elected and given power to make the necessary arrangements.

"*Accredited*" *Milk.*—The Hon. Secretary called attention to a meeting organised by the B.M.A. to be held at Margate, one of the subjects for discussion being the Accredited Milk Scheme. A supply of tickets was available and were distributed to the various Fellows who hoped to attend.

Elections.—Mr. F. A. Crowhurst, M.R.C.V.S., Maidstone, and Mr. W. P. Blount, F.R.C.V.S., Lewes, were elected Fellows of the Society.

Nominations.—Major C. Davenport, R.A.V.C., and Captain J. V. Tevlin, R.A.V.C., were nominated for election at the next meeting.

Papers and Demonstrations

The meeting now discussed various subjects brought forward by Fellows and visitors.

Mr. S. B. Vine (Maidstone) gave a short paper in connection with tuberculosis and tuberculin testing in two cows.

Mr. F. A. Crowhurst (Maidstone) showed some X-ray photographs and made some remarks on two interesting cases in dogs.

Mr. E. P. Barrett (Margate) discussed the following interesting cases:—

(*a*) An unusual case in a dog.
(*b*) Distemper in a kennel.
(*c*) X-ray examination.
(*d*) Nephritis—or Stuttgart disease.

[Mr. Barrett's description of these cases is transferred to our Clinical section.—*Editor.*]

Mr. A. Spicer (Oxted) made some remarks on the probable causes of hysteria in dogs.

Dr. C. L. Oakley (Beckenham) demonstrated several pathological conditions in animals. He brought with him some excellent specimens which illustrated the various conditions.

(*Concluded at foot of Col.* 1, *page* 344.)

Milk as a Factor in the Causation of Disease

Opening the discussion on the above subject which took place at a meeting of the Section of Medicine of the Royal Society of Medicine on February 23rd, Dr. W. G. Savage, Medical Officer of Health, Somerset, said that since milk offered an excellent culture medium for the growth of bacteria, the possibility of the transmission of certain infectious diseases by means of milk must always be borne in mind. Such infectious diseases might be classified as:—

(*a*) Those which are natural infections of both the cow and man; (*b*) those which are spread as the result of chance contamination of the milk by human beings after withdrawal from the udder.

(a) *Infections Common to Cows and Man*

Tuberculosis.—Of the natural infections common to cattle and to human beings tuberculosis is of primary importance. An analysis of statistics of the Registrar General for 1931 revealed the following incidence of bovine type of tubercle infection in man:—

Percentage of total cases of tuberculosis caused by the bovine type.

Respiratory.	Nervous.	Abdominal.	Generalised.	Miscellaneous.
		Cases under 5 years.		
0	34	80	25	11
		Cases over 5 years.		
1	20	33	9	5

A total of 731 deaths was due to the bovine infection. The above figures in certain cases minimised the dangers of bovine tuberculosis; thus it had been found in north-east Scotland, in Bradford and in Staffordshire that the incidence of cases of bovine type pulmonary tuberculosis in humans over five years old is considerably higher than 1·0 per cent. Quoting from the report of the People's League of Health, the speaker stated that "it is estimated (*a*) that about 6 per cent. of all deaths from tuberculosis are caused by the bovine type of bacillus; (*b*) that about 2,000 deaths, mostly in children, occur annually from this cause; (*c*) that at least 4,000 fresh cases of bovine tuberculosis develop each year; and that (*d*) an immense amount of suffering, invalidity and often permanent deformity is caused by this bacillus."

Still quoting from the same report, "about 40 per cent. of all milch cows in Great Britain are affected though the incidence of infection varies very markedly from district to district, and about 0·2 per cent. of cows have tuberculous mastitis. The degree of contamination of samples of raw milk from herds varies around 6 to 8 per cent. whilst all samples taken from large bulk supplies are contaminated with tubercle bacilli."

Brucella abortus.—This was an extremely prevalent infection amongst cattle and according to Priestley not less than 20 per cent. of cattle show specific antibodies in their blood. Eight to 10 per cent. of samples of ordinary raw milk contain *Br. abortus* and a survey of herd samples from graded and ungraded herds revealed the incidence of contamination to vary from 20 to 70 per cent.

Of recent years the incidence of undulant fever in man has been found to be much higher than was suspected. Thus Dalrymple-Champneys reported 115 authenticated cases in 1933 including four deaths; whilst Wilson reported 136 cases in 1932. According to the latter worker, 500 fresh cases of undulant fever, as judged by serological tests, develop annually in England and Wales. The speaker then drew attention to the very low incidence of undulant fever as compared to the vast opportunities for the development of infection through the consumption of contaminated milk.

Streptococcal Infections.—Whilst the streptococci normally responsible for bovine mastitis are non-pathogenic for man, organisms which are the cause of human angina may sometimes invade the udder of the cow leading to contamination of bulk milk supplies and thus to widespread epidemics amongst consumers; for example, at Colchester in 1905 such an outbreak involved 600 cases. It was of interest to note that whilst these milk-borne streptococcal epidemics were common in Great Britain prior to 1910, they have since become less common, whereas in the United States their occurrence has increased during recent years. The speaker then emphasised that, in his opinion, milk-borne epidemics of scarlet fever due to infection of the udder of a cow are much less common than similar outbreaks of angina and possibly never occur.

Salmonella Food Poisoning.—A number of outbreaks of this type are on record which are primarily due to infection of the cow. Some of the outbreaks have been extremely extensive, involving upwards of 500 cases in a single epidemic, but an interesting feature of such outbreaks has been the low case mortality as compared to that of similar epidemics arising from contaminated meat, etc.

Anthrax.—Owing to the rapid course of anthrax in cattle the risk of spread of infection to man is not great and there are no records of such spread in Great Britain.

Foot-and-Mouth Disease.—No records of spread of this infection to man are available in England, though such epidemics have been reported on the Continent.

(b) *Infections Conveyed to the Milk by Means of Human Beings*

Such conditions include diphtheria, scarlet fever, typhoid, paratyphoid, dysentery and angina. Owing to lack of data it is difficult to estimate the true importance of this type of contamination of milk but it is certainly responsible for a large number of outbreaks of infectious disease. Trouble usually arises either from the existence of an unsuspected human carrier of infection amongst those in contact with the milk, an instance being the dysentery

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Captain F. C. Gillard (Folkestone) showed some X-ray photographs.

The President kindly entertained the assembly to tea, during which Sir Frederick Hobday addressed the meeting on various subjects, referring particularly to the use of modern scientific discoveries in connection with veterinary science. He referred especially to the use of wireless and the aeroplane.

T. Dalling, *Hon. Secretary.*

epidemic at Aberdeen, or else because a case of infectious disease is nursed on the farm. One previously unrecorded outbreak of diphtheria at Glastonbury is of interest. A milker developed diptheria and was sent to an isolation hospital and was subsequently discharged after negative swabs had been taken. Meanwhile his brother also became infected, was isolated and subsequently discharged after an inadequate examination of swabs. The latter individual was still carrying infection when leaving hospital and he reinfected his brother who in turn contaminated the milk supplies.

As regards the portal of entry of these infections, the enteric and dysentery infections gain access through the intestinal mucosa, streptococci and diphtheria through the tonsils, and tuberculosis possibly through the tonsils as well as through the intestinal mucosa. The portal of entry of *Br. abortus* is not known.

The speaker concluded by emphasising that milk is a common vehicle of infectious disease. "Its importance in the spread of tuberculosis is measurable and methods of removing such danger are known; to a lesser extent the same is true for undulant fever. Under such circumstances it is *disgraceful* that very indifferent obstacles should be allowed to stand in the way of the removal of these menaces to human health."

Dr. F. C. Minett observed that reports by various investigators regarding the incidence of *Br. abortus* in samples of milk show great divergencies and the reasons for these divergencies have been made a subject for special study. As was anticipated, variations in technique for the isolation of *Br. abortus* account for many discrepancies but other factors also play a part. Thus, using one standard technique, it was found to be much easier to isolate *Br. abortus* from high quality milk than from milk produced under poor hygienic conditions, though all available information suggested that any differences in incidence of contamination of the two classes of milk should be in favour of the high quality product. It was evident that some factor present in the poor quality milk inhibited the development of Brucella infection in guinea-pigs used for the biological test of such samples. The normal bacterial flora was found to have no influence in this respect but the presence of tubercle bacilli was shown to exert a strong inhibitory action upon the development of Brucella infection when the two organisms were inoculated simultaneously into guinea-pigs.

Haemolytic streptococci pathogenic for the udder of the cow may be divided into those which are weakly haemolytic and those which are strongly haemolytic. The former are purely bovine pathogens but the latter group includes strains highly pathogenic for man. Early surveys of bovine mastitis revealed the presence of a surprisingly high proportion of strongly haemolytic strains isolated from the udders of infected cows. In the light of more recent knowledge of the value of the fermentation of sorbitol and trehalose in differentiating human and bovine types of *Str. pyogenes*, it has been shown that some, though not many, of these strongly haemolytic strains of streptococci isolated from cows are true human pathogens.

Evidence regarding the part played by the cow in the spread of streptococcus epidemics falls under three headings:—

(a) *Epidemiological Evidence.*—Unless it is admitted that contamination of milk results from infection of the udder it is difficult to explain how extensive epidemics occur. Chance contamination of milk supplies could only cause large epidemics if rapid multiplication of such streptococci occurs in milk under ordinary conditions of storage.

(b) *Cultural Evidence.*—Extensive studies have shown that *Str. pyogenes* rarely multiplies in commercial grades of milk stored at atmospheric temperature. When multiplication does take place it occurs too slowly to be an important factor in the wholesale contamination of pooled milk.

(c) *Direct Evidence of Infected Cows.*—Cows with natural udder infections of *Str. pyogenes* responsible for streptococcus outbreaks have been identified, whilst other cows have been artificially infected in the udder with these organisms.

Contrary to the opinion expressed by Dr. Savage, the speaker gave it as his belief that scarlet fever epidemics as well as outbreaks of septic sore throat occur as the result of infection of the udder with *Str. pyogenes*. Two outbreaks were quoted in support of this opinion. The one consisted of a few cases of scarlet fever amongst a farmer's household and staff which originated from an infected cow. The second was the recent scarlet fever outbreak at Doncaster. In this outbreak 186 cases occurred including three deaths. The majority of cases were reported on December 10th, 11th and 12th and the milk was immediately suspected as being the vehicle of infection. By December 15th the causal organism had been typed and on that day the cow ultimately identified as the source of infection, was passed as normal except for very slight induration of the udder when clinically examined by a veterinary surgeon. On December 16th the organism was isolated from one sample when group samples of all cows concerned were examined. By December 24th one cow had been identified as showing *Str. pyogenes* infection in two quarters of her udder. At this stage the cow in question showed symptoms of acute mastitis. Subsequently the cow was removed to the Royal Veterinary College for observation. By January 6th the one infected quarter had ceased to excrete but *Str. pyogenes* could still be isolated from the other quarter and by this stage the affected quarters were very atrophied. Dr. Minett emphasised that this cow must have been excreting streptococci at a time when her udder appeared to be practically normal.

It was also mentioned that Dr. Bendixen, in Denmark, had identified a cow responsible for a rather similar outbreak of scarlet fever.

Dr. C. W. A. Scott instanced typhoid fever as possibly being an example, not already mentioned, of the type of disease normally affecting man which could sometimes infect cows. No unassailable evidence exists to indicate that cows can become actively infected with *Salmonella typhi*. However, in one instance, epidemiological evidence pointed strongly in this direction. In the recent Bournemouth typhoid epidemic all available evidence indicated that infection originated from the milk of one small farm which supplied 20 gallons daily towards a 1,000-gallon pool. No human carrier was identified on this farm and the water supply was good, but the cows were watered at a river heavily contaminated with sewage effluent containing many typhoid bacilli. It was difficult to understand how surface contamination of the cows could have been transferred to the milk in sufficient quantities to cause so great an epidemic. If, however, one or more of the cows had developed an active udder or enteric infection the extensive and long course of the epidemic could easily be understood. The

individual cows were examined and failed to reveal infection, but the examination was carried out at a very late date.

General Discussion

Dr. O. C. Hawthorn advocated the necessity of pasteurisation for safeguarding the milk supplies. Furthermore, the public should be educated to demand pasteurised milk, and no mis-statements regarding the value of pasteurisation made in public should be allowed to pass unchallenged by those concerned with public health.

Dr. Tom Hare stated that the danger of the cow disseminating bovine tuberculosis to man was exaggerated. The dog and the parrot ranked amongst other sources of infection. The production of safe milk was surely a higher ideal than the mere safeguarding of human health by pasteurisation. Finally, he urged that investigators should withhold their progress reports on the subject of safe milk production and ultimately present the world with a complete treatise of findings and conclusions, instead of reporting small and often conflicting versions of their researches.

Mr. Steele-Bodger observed that the adequate clinical examination of cows with elimination of those infected, reduced the incidence of udder tuberculosis to negligible proportions. Pasteurisation of milk merely gave the consumer a false sense of security and encouraged the farmer to produce his milk in a careless fashion.

Dr. J. F. Brock stated that it was the duty of the medical profession to instruct the layman about the type of milk which is safe for consumption. He urged that the production of safe milk should be considered as two distinct phases: (*a*) a long-term policy designed to eliminate all dangerous diseases; (*b*) a short-term policy of efficient pasteurisation designed to provide a safe milk supply at once.

Dr. R. Hamberger pointed out that in Germany the dangers associated with contaminated milk had been overcome by boiling all milk prior to consumption. Vitamin could readily be replaced by appropriate dietary measures. Butter to be fed to young children was melted and heated until it began to brown.

Mr. E. G. White urged the danger of members of the medical and veterinary professions entering into public controversies in the lay press. Authoritative opinions were so readily distorted by misquotation or by reproduction of small fragments without the explanatory or qualifying statements which accompanied the originals.

Dr. R. P. Williams referred briefly to a milk-borne scarlet fever outbreak in a children's sanatorium which involved about 150 cases. This outbreak would have been avoided had pasteurised milk been used at the institution.

Dr. Savage (in reply) expressed his very great interest in Dr. Minett's report of the Doncaster scarlet fever outbreak; a little more evidence of that type would induce him to alter his opinion about the genesis of scarlet fever epidemics as a result of infection of the udder of the cow. On the other hand, he was not impressed by the evidence presented by Dr. Scott in support of the hypothesis of active infection of the cow with typhoid bacilli. He refused to enter into any discussion regarding the merits of pasteurisation, as such a subject did not come within the scope of the meeting. He considered the suggestion that dogs and parrots should rank with cows as important sources of bovine type tuberculosis as being contrary to known facts and he designated as ridiculous the suggestion that results of research should be withheld indefinitely. Those concerned with public health must consider and if desirable apply every available item of information at the earliest possible opportunity.

Dr. Minett (in reply) agreed to the two-policy solution to the problem of safe milk production; namely, the immediate safeguarding of health by pasteurisation and the gradual elimination of disease. The latter policy, being largely governed by economic considerations, must inevitably proceed slowly.

In Parliament

EXPORTATION OF HORSES BILL

Government Support Secured for Second Reading

On Saturday of last week the House of Commons gave an unopposed second reading to the Exportation of Horses Bill, introduced by Mr. Radford, which is designed to stop the export from this country to the Continent of work-worn horses, whether for slaughter or for further work.

A large attendance showed an eager interest in the subject, and (states that journal) it was evident from numerous references that the letter from Sir Frederick Hobday published in *The Times* had impressed many who had been doubtful of the merits of the Bill. There was a vigorous reaction against unfair criticisms that have been made of the veterinary officers of the Ministry of Agriculture, as well as against irresponsible propaganda.

Mr. Radford, in moving, said that the object of the Bill was to stop the existing export of work-worn horses from this country for slaughter, or for further work before slaughter, abroad. The Bill involved no interference with the export or re-export of young and valuable horses.

The present position of the law was that all horses which had been shipped abroad from this country must have been previously examined by a veterinary officer of the Government, who would not allow shipment to take place unless the horse was, in his opinion, fit to travel without cruelty and fit to work without suffering. He, of course, made no charge against his Majesty's veterinary officers, who did their duty honourably and in a perfectly satisfactory way. The present law, however, allowed the export of a certain number and type of horses, and the object of Bill was to stop those animals, which were described as work-worn, from being eligible to go.

The Bill extended the prohibition contained in the Diseases of Animals Act, 1910, as amended by the Exportation of Horses Act, 1914, on shipping or attempting to ship unfit horses, so as to include any horse unless it was certified by the veterinary inspector to be, in his opinion, not more than eight years of age and of not less value than, in the case of a horse of 14 hands and over, £25, and, in the case of a horse under 14 hands, £12, and, in the case of an ass, £3.

There were undoubtedly at present people in this country who, when they began to detect signs of failing powers on the part of their horses, sold them. Across the Channel a better price was frequently obtainable for an old horse with sufficient life in it to allow the inspector to pass it than was the case at home. A few months ago Mr. Fred Fox, the well-known jockey, bought up an old British war horse in this country for £3. He stated that its condition was such that, under our law as it existed to-day, His Majesty's veterinary inspectors would have had no option but to have passed it, if it had been taken to a port for export, because it was fit to travel without suffering and was certainly fit to work without cruelty.

It was essential that the House should take note of the revealing evidence which had now been obtained about the treatment meted out on the Continent of Europe to work-worn animals in a condition in which they would not be able to walk 200 yards on an English road without being stopped. In the streets of Brussels one saw well-fed and well-groomed horses, but these work-worn animals fell into the hands of smaller buyers, many of them in the villages, and there was no protection for them. There were no statistics about the fate of the old horses which had gone from this country and which had not been immediately slaughtered. The Ministry said frankly that they had no power to control what happened to horses after they had been discharged at the other side.

They endeavoured to secure information from the consigners about the purpose for which the horses were being sent, but there was no statutory requirement that exporters must declare the purpose for which the horses were exported. In 1936 the number of horses exported for immediate slaughter was 16 out of a total of 3,134. In the light of what he had heard, he considered that the horse which was taken for immediate slaughter was fortunate. If, out of the 3,134, all but 16 horses had been destined for immediate slaughter there would have been less need for the Bill than there was, because death was preferable to the lot that awaited them.

The hon. gentleman quoted from a sworn statement on bad cases of lame horses which had been discovered in different parts of Belgium, and continued: When he read of these cases he felt he owed it to these horses to go to Belgium, so that he would be in a position to answer any questions which might be put in the House. When he arrived at Victoria to join the boat train he was met by Sir Frederick Hobday and another eminent veterinary surgeon, who said they would go with him. He went to the stables in Brussels where the poor old wrecks which were rescued were taken. All the horses he saw were in a bad state.

If the 31,000,000 electors in our country could give their views on this question there would be more than 30,000,000 people in favour of the Bill. He had never met anyone, except one or two members of the House, who expressed the least dissent. He hoped that between now and five years hence they would have got the Governments and peoples of France and Belgium, the two principal offenders, to bring their countries into line.

Among the members who wanted to commit the Bill to a Select Committee was Wing Commander James, who in a letter to *The Times* on November 4th, said that the whole subject was very thoroughly investigated in 1925 by a strong Departmental Committee, that no facts had been produced to controvert the findings of the committee, and that the present efficient and well-administered law was adequate. Why did the hon. member want the Bill to go to a Select Committee when he said that the whole thing had been examined? (Hear, hear.) He (Mr. Radford) appealed to the House to support the Bill and save these old horses from a fate worse than death which awaited them across the Channel. (Cheers.)

Humanitarian Feeling

Mr. Hopkin, in seconding, said that in spite of previous Acts and Orders it was abundantly clear that it was possible to-day for many old work-worn horses to be shipped abroad. The letter from Sir Frederick Hobday in *The Times* on the previous Wednesday was a full and clear corroboration of what Mr. Radford had said. There was no kind of attack or criticism intended on the veterinary services. Those officials carried out their work most efficiently, but in spite of that the horses got through. Even if no horses at all were exported from this country there would be need for such a Bill as that, for there was in this country a tremendous body of humanitarian feeling desiring to be assured that what had been written and spoken about the export of horses should be made impossible. The Bill was a sensible and practical one.

The Marquess of Titchfield said that before the Act of 1910 the export of horses from this country was carried out in an unsatisfactory manner. The 1910 Act was not good enough and another Act was passed in 1914 and in 1921 an Order was made dealing with the matter. A later Departmental Committee, of which he was a member, found that the trade in decrepit horses in the terms of the period before 1910 did not exist at all. The committee also found that the trans-shipment arrangements for the horses were extremely good.

Anyone who knew anything about horses would realise that the provision that horses might not be exported if their value was less than £25 was not as simple as it seemed. The veterinary officers at the ports did their work admirably, but they were not trained valuers. Unless one was in the trade it was extremely difficult to value horses. If there was not a uniform standard of valuation there would be many horses going to some ports and few to others. He would be glad to give his blessing to the Bill if the promoters would alter the figure from £25 to £20. He thought £25 was rather too high, and £20 was a good round sum which they could all understand. (Laughter.) The Bill was a useful one, and he hoped the Government would assist to put it on the Statute Book. (Hear, hear.)

Mr. Leslie said that all lovers of animals should be whole-hearted supporters of the Bill, and there was no need for it to be sent to a Select Committee. There was plenty of evidence to enable the House to decide the matter.

"Hysterical Rubbish"

Wing Commander James said that Mr. Radford had not produced any evidence relevant to the present trade. They were not concerned with what the Disposals Board had done or had not done. He and his friends who had put down the motion to refer the Bill to a Select Committee had done so because they did not want to move its rejection—they wanted a Bill—and that was the only course open to them to bring the

House down to realities, and to try to dispel a mass of hysterical rubbish that had been written and spoken on the matter.

Since he had exposed himself to some measure of odium by taking up the line on this question which he had done he would observe in defence that he was a very keen animal lover. But years ago he began to search for the facts in regard to this business. It very soon became apparent to him that while there was an enormous amount of rumour and statement the actual facts were very hard to come by. In 1924-25 he made inquiries round his own district in the South Midlands, and he found that the trade certainly did not orginate from that part of the country. Afterwards he went to the port of Leith. There he found that the extent of the trade was infinitely smaller than he had expected and the whole of this agitation was regarded, not only among the vested interests, but among all those who were on the spot, as being ridiculous and overdone.

The hon. and gallant member went on to speak of a pamphlet which referred to the "merciless butchery of horses on a Spanish Sunday," and which, he said, contained many exaggerated statements. The whole suggestion in the pamphlet, though it was not specifically stated, was that British horses went into the Spanish bull ring. (An Hon. Member: "So they do.") That had been studied before, and there was not the slightest evidence for it. It was an example of prejudice deliberately disseminated. No British horses, certainly for the last 20 years, had gone into the Spanish bull ring. All the horses which were exported from this country, nominally for slaughter, were indeed, slaughtered abroad, and not worked prior to slaughter.

In a letter which was published in *The Times* recently it was stated that during the month of October eight aged horses were exported from Leith to Rotterdam, and that only one of these was slaughtered on arrival. He had had all these horses traced. All the horses were slaughtered and were never sold for work. Indeed, the importation of horses for work was forbidden except by special permission of the Dutch Government. He was assured that the statement made in the letter to *The Times* was absolutely incorrect. The British figures showed that the export of horses to Belgium and France was now nil in one case and negligible in the other. In 1936, according to Belgian official figures, only one horse was imported into Belgium for slaughter from this country. No objection could legitimately be taken to exporting horses to Holland for immediate slaughter. Conditions of slaughter were better there than in this country.

To-day horses which were being rejected for work abroad at the veterinary inspection at Leith were subsequently being taken back to work in the streets of Edinburgh. The supporters of the Bill had produced no evidence that the present legislation was not sufficient. In its present form the Bill was unworkable. A Bill was necessary, not to protect horses, but to protect people from being exploited on behalf of horses. (Cheers.)

Major Hills said that the Departmental Committee which in 1925 examined this subject reported that no worn-out or decrepit horse left these shores. Members of the committee visited the ports and found that horses were very carefully examined. Any horse which, in the opinion of an inspector, was not fit to travel and fit to work was immediately and without question rejected. Horses were kindly treated on board ship.

Societies which were interested in this question and which appealed to the public for support were putting out a lot of propaganda and saying that worn-out horses were still leaving these shores. That was an intentional untruth. So strict was the inspection that horses rejected for shipment abroad could be sold on the quay and worked in this country without prosecution for cruelty. He hoped that some of these societies would cease wasting money in misleading the public and would devote their ample funds to remedying this very real evil. (Cheers.) He was deeply affected by Sir Frederick Hobday's letter to *The Times*. A better instructed man on horses did not exist in any country, and he was invaluable to the Departmental Committee, and when he reported the terrible conditions in which he found some British horses in Belgium he gave the speaker reason to think. The difficulty was that horses became worn out in time; the horses that would go under this Bill would one day be worn out. He would vote for the Bill. If horses were to be eaten in Belgium, Holland and France, why not kill them over here? (Hear, hear.)

"Deplorable Conditions"

Sir R. Gower, speaking as Chairman of the Royal Society for the Prevention of Cruelty to Animals, said there had no doubt been a great deal of misrepresentation about the export of horses. His society had its own inspectors at the ports of embarkation, and the reports received from them showed that the veterinary inspectors of the Government were meticulously careful in carrying out their duties. For some years now no old and decrepit horse unfit to travel and work had left the shores of this country. Yet a good case had been made out for the Bill. There could be no doubt, particularly having regard to the letter from Sir Frederick Hobday in *The Times* on Wednesday, that the conditions under which horses worked on the other side of the Channel were deplorable.

The standard of kindness to animals there was not the same as in this country. He appealed to the Minister of Agriculture to give facilities for the Bill to be passed into law and to take into consideration the fact that horses sent from this country fit to work and travel were, on account of the category they were put into on the other side of the Channel, speedily reduced to decrepitude and subjected to treatment that hon. members would deplore. Owing to the activities of the R.S.P.C.A. the standards of kindness to animals in foreign countries were perhaps slowly but surely rising. He hoped the time would not be far distant when the standards which existed in this country would exist there. By passing the Bill a great deal of good would be effected. They must all desire that some form of legislation should be passed to prevent, as far as possible, any British horses being subjected to the conditions which existed on the other side of the Channel.

Squadron Leader Wright said that foreigners condemned our hypocrisy in talking about cruelty and yet refusing to take the action in our power to stop this traffic, which was a blot on our honour. Among the things which made this revolting trade possible was the thoughtlessness and ignorance of people who kept horses but did not understand them. Only legislation and severe penalties would stop the commercialisation of the suffering of outworn horses.

Sir R. Glyn hoped the House would give a unanimous vote in favour of the Bill. The Government would be well advised to state that

if the Bill got a second reading they would do their best to amend certain features which made the Bill as printed impossible of acceptance. The L.M.S. Railway Company, of which he was a director, were the largest users of working horses. They had more than 9,500 horses in their stables. In 1931 the company decided that none of its horses should go abroad if there was any doubt about the treatment it would receive. The decision had been at the expense of the shareholders, but he was sure that no shareholder would have wished the policy to be changed. The superintendent in charge personally inspected all horses that were to be cast, and if any horse did not fetch more than £12 when put up for auction it was withdrawn and humanely slaughtered. The help the Government could give in this matter was to shut down a trade which had already been reduced to a trickle.

Mr. Graham White said that the Liberal Party supported the Bill. He hoped that it would receive a second reading. He wished to express his admiration of the sincerity and courage shown by Wing Commander James in his speech. The hon. member's speech had served a useful purpose because as the debate had developed it had reduced the problem to a proper sense of proportion and the superfluities and exaggerations had been swept away. He hoped that the Government would indicate the lines on which it would be necessary to amend the Bill in order to make it a practical and workable measure.

Plea for Slaughter at Home

Mr. Macquisten said that if horses were to be slaughtered there was no reason why they should not be slaughtered here. When our horses were work-worn and old we ought, if possible, to give them a comfortable home, with plenty of grass and corn. If we could not do that we should give them euthanasia and an easy death. Having had the best out of the horses, to send them abroad for a few pounds was criminal.

Sir J. Haslam supported the Bill, and commented that much had been made of the argument that this traffic was a very small business. That was all the more reason why it should be abolished, and it showed that it could be done more easily. Its abolition would hurt very few people and would do a great deal of good. If there were mistaken or exaggerated ideas with regard to the scope of the traffic in horses and its cruelty it would be better to pass the Bill and allay the suspicion. We ought to do away once for all with this trade, about which many people felt so strongly.

Lieut.-Commander Fletcher thought that if horses were rejected by veterinary inspectors as not fit to work abroad they ought not to be allowed to work at home. He was told that it was the case that horses for sausage-making were frequently kept without water for several days before slaughter, in order to reduce the moisture.

The Turf and the Bill

Captain Heilgers said that Wing Commander James had not proved that every horse which was exported to France and Belgium went for slaughter. Sir Frederick Hobday's letter to *The Times* showed what was suffered by horses on the Continent. Leaders of the Turf supported the Bill, and no one would accuse members of the Jockey Club of being cranks. We owed a debt of gratitude to the veterinary officials of the Ministry of Agriculture. He would like an assurance that prohibition of the export of horses in rough weather was still continued, and he hoped that the Minister would look on the Bill favourably.

Sir E. Campbell asked, if the Bill was passed, would it stop the legitimate trade in horses?

Mr. Raikes believed that if the Bill were passed in its present form the Shetland pony would be completely excluded from export. That would be very absurd, because the Shetland pony was exported as a domestic pet and the trade was one with which no cruelty was associated.

Mr. Morrison's Reply: The Bill Accepted

Mr. W. S. Morrison, Minister of Agriculture, said that he had been asked about the sailing conditions of the horses exported. In 1933, out of over 3,000 horses exported, there were four casualties; in 1934 there was one casualty in a similar number; and in 1935 and 1936 there were no casualties. Those figures showed that the horses were being carried, both as regarded the fittings of the vessels and the weather in which they sailed, with every possible regard to their humane treatment. (Hear, hear.) He was glad that Mr. Radford had selected this subject to bring forward and the House ought to be grateful to him. (Hear, hear.)

Quite apart from the merits of the measure, the discussion had been a most valuable one and had cleared away a great deal of fog which had hitherto encircled this subject. The whole country would be relieved to find that we had not been such villains in the past as some propagandist societies would have led us to believe. (Laughter and cheers.) Mr. Radford's speech was free from that distortion and exaggeration which so frequently marred references to this subject. (Hear, hear.)

He proposed to ask the House to give the Bill a second reading. (Cheers.) He need not say that the Government were anxious to stop any cruelty or any opportunity for cruelty in so far as they could. If there was in the opinion of the House anything that could be done to render the dealing with horses in this country more humane the Government would be delighted to assist in any way they could. Mr. Radford had introduced to the House certain very sad cases which he had observed, he believed, in Belgium. He (Mr. Morrison) was not in a position to controvert the accuracy of that information. Mr. Radford went to Belgium in circumstances particularly favourable for gathering information of this character, and he accepted it from the hon. member that these things were true. He (Mr. Morrison) had only been to Belgium once in his life, and that was not under the auspices of a humane society. (Laughter.) He was billeted frequently on peasants in Belgium and Northern France, and having always been interested in farming and horses had observed their practice closely. He saw the horses on the farms there treated with the utmost consideration and affection. (Cheers.) Cases of cruelty there might be, but his experience was that the French and Belgian peasants were legitimately proud of that magnificent breed the Percheron horse in that part of the world. He had seen horses treated with the utmost consideration, kindness, and intelligence, and worked humanely by a people who did not spare their own bodies in working.

He mentioned this for what it was worth and not as setting forward a general argument that there was no cruelty on the Continent; but he would not like the House to pass its judgment on this matter by taking refuge in any facile or fallacious generality that all foreigners were cruel. Of course, it was true that practically every horse that was used on the Continent for

agriculture or for other purposes found its way, sooner or later, to the slaughterhouse, and was consumed for human food. He did not suppose the old horse cared very much which particular end it achieved after it was slaughtered. Our business was to see as far as we could that when it was alive it was saved from cruelty and oppression. (Hear, hear.)

The question was: How had the existing powers in this country been exercised? The exportation of horses, like many other trades, ceased during the War and was not really resumed until 1920 or 1921. In 1921 the Minister conducted an inquiry into some allegations that unfit horses were being passed for shipment. The inquiry revealed the fact that a number of horses had been passed at some northern ports of England which were not up to the required standard of fitness.

The officers of the Ministry of Agriculture had come in for much unfounded and unjust criticism from irresponsible bodies who did not know what they were talking about. (Cheers.) As results of the reorganisation in 1921 full-time inspectors had been appointed and the standard of fitness was revised so as to prevent the shipment of any doubtful animal. The fittings of all vessels were overhauled so that it might be certain that proper equipment for the carriage of animals was aboard all vessels. The cheapest horse was carried to the Continent now with as much comfort and safety as the most valuable hunter. (Cheers.)

A High Standard

In 1921, before these measures were taken, 45,120 horses were passed for export, and the number of carcases of dead horses shipped was 24,918. In 1935, 2,670 horses were exported, of which 21 were said to be for slaughter, and 22,571 carcases of horses were sent over. These figures made it plain that the result of the Ministry's endeavours had been to change the traffic from a live horse to a dead horse trade. The Departmental Committee of 1925 were able to give a very good character to the administration of this trade. Their report was a record of work thoroughly and well done. The committee were satisfied that no horses which could be called decrepit had been passed for export since the reorganisation of 1921. The standard imposed was so high that horses in worse condition than those which had not been allowed to be exported could work in the streets at home without attracting unfavourable comment, far less prosecution.

At one time he was prepared to ask the House to adopt the Select Committee procedure so that those who had been so unfairly criticised might have the opportunity of defending themselves, but the debate had convinced him that there was no hon. member who did not believe these officers had discharged their duty. Therefore he advised the House to give the Bill a second reading and to send it to a Standing Committee, and to leave these unfounded allegations to the contempt they deserved. A body known as the Equine Defence League sent a resolution to him in January complaining that "England was disgraced by the export of diseased, work-worn, and naturally defective horses, and all the inevitable sufferings thereby entailed," and urging the immediate abolition of this traffic. This was in spite of the fact that no such traffic was allowed. Bodies which appealed to the public for subscriptions should impose on themselves a certain standard of common veracity. (Cheers.) The stream of charity should be devoted to the most useful measures.

Total shipments in 1936 were 3,134 and if the Bill had been in operation it would have stopped 695 horses, or 22 per cent. Of the 695, 210 would have been allowed to be shipped with certificates from secretaries of approved horse-breeding societies. In the remaining 485 there were included 154 circus horses, 169 Shetland ponies, five Welsh ponies, 32 other ponies, twelve asses, a carriage horse, a total altogether of 435 horses which did not really come into the category. So that the total number of prohibitions would have been 50.

The promoters of the Bill should concentrate on the light or heavy draught horse which was used by a railway or brewery company as a van horse and whose feet, after three or four years in the City, could not stand up to the City streets but which was still a good horse for agriculture and was bought in large numbers by farmers and played a big part in our agriculture. He did not like the proposal to require certificates from the secretaries of approved horse-breeding societies, and in so far as the House recognised the necessity for exceptions and exemptions the House would do far better to entrust the work to the Ministry of Agriculture, whose officials were beyond suspicion of partisanship on one side or the other.

It was difficult to justify any interference with the free passage of circus animals just because they had reached a certain age. He was informed that a circus horse was not at his best till he was at a certain age. Circus horses, of all horses in the world, received the best treatment. They were animals whose face was not only their fortune but their master's fortune —(laughter)—and consequently they were able to command a degree of looking after that no other horse could.

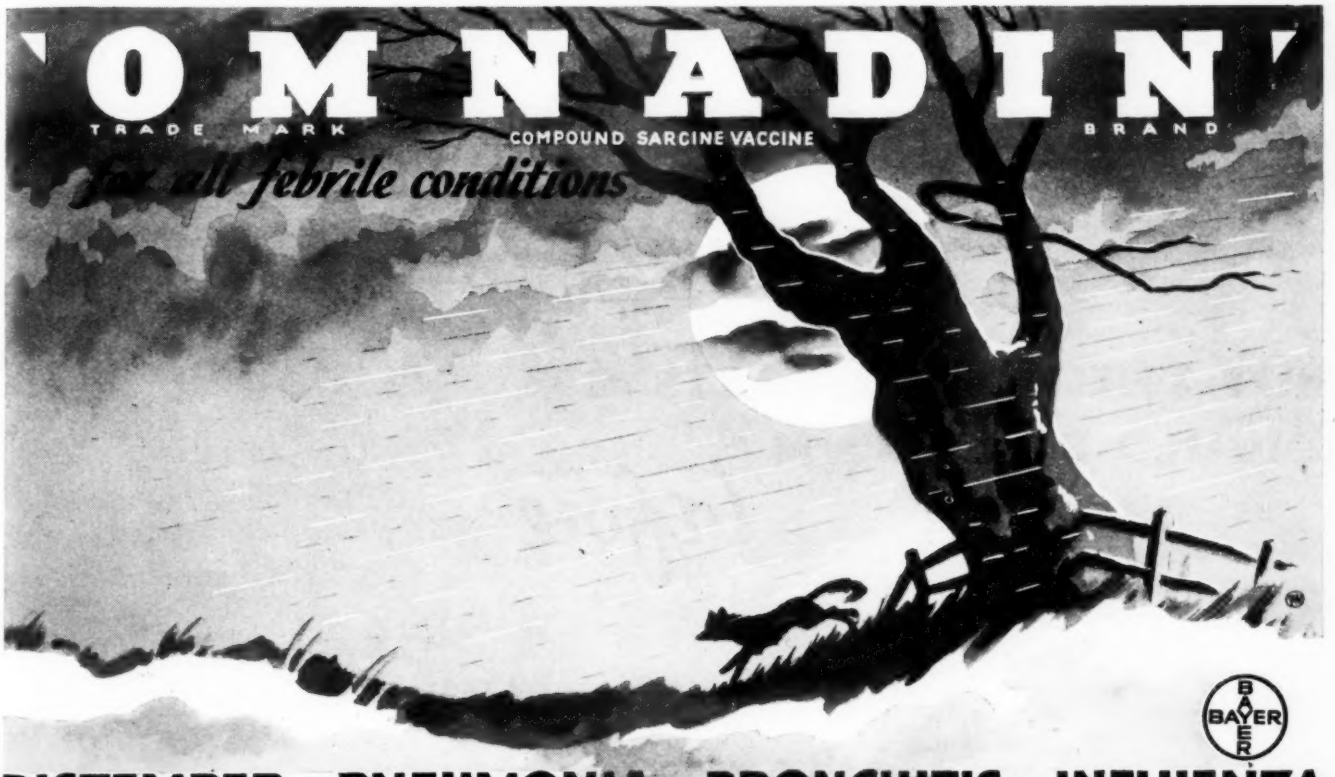
With regard to Shetland ponies, he was not disposed to agree to a provision which would confuse this little animal, which was quite unsuitable for consumption for human food, with the really heavy draught horse. Carriage horses and hacks were sometimes brought over from the Continent by a military attaché accredited to one of our embassies here and it was surely proper that that sort of thing should be provided for.

He did not like the idea of extending the operation of the Bill to prevent animals going to Ireland or the Channel Isles. No people in the world had a better character for looking after horses than the Irish. (Hear, hear.) Almost entirely the trade between this country and Ireland was in high-class horses.

Mr. Henderson Stewart, one of the promoters of the Bill, expressed gratitude for the statement of the Minister. It was a source of great satisfaction to the promoters to have won this victory. They would consider carefully the suggestions the Minister had made, and would endeavour to meet him at any reasonable point. They associated themselves with the sharp rebuke the Minister had given to certain people and organisations who exaggerated the case and imputed unfair and unjustifiable motives to officials of the Ministry. Every claim that the Minister had made for his Department was justified.

Lieut.-Colonel Moore said he wished on behalf of horse lovers to thank the Minister of Agriculture for accepting the Bill subject to minor amendments.

The Bill was read a second time.



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The following questions and answers have been recorded in the House of Commons recently:—

Horses in Mines

Mr. A. Jenkins asked the Secretary for Mines the number of horses, ponies, and other animals used for haulage purposes in the mines of Great Britain; the number in each district; the number of horse inspectors in the service of the Mines Department; and the number of prosecutions, if any, for cruelties and other infringements of the law for each year since 1926?

Captain Crookshank: There are at present eight horse inspectors in the service of the Mines Department. As the reply to the remainder of the question involves a number of figures, I will, with the hon. Member's permission, circulate it in the Official Report.

Following is the information:—

Horses employed below ground at June 30th, 1936

District	No. of Horses on the Colliery Books.
England and Wales	
Northumberland	3,164
Durham	9,758
Cumberland and Westmorland	133
Lancashire and Cheshire	170
Yorkshire, South	2,208
Yorkshire, West	2,489
Nottinghamshire	1,477
Derbyshire, North	1,986
Derbyshire, South	192
Staffordshire, North	58
Cannock Chase	1,090
Staffordshire, South and Worcestershire	429
Leicestershire	553
Warwickshire	179
Shropshire	244
Forest of Dean	255
Somersetshire	69
Bristol	30
Kent	—
South Wales and Monmouthshire	7,396
North Wales	124
Scotland	
Fife and Clackmannan, Kinross and Sutherland	17
Lothians (Mid. and East) and Peebles	49
Lanarkshire, West Lothians, Stirling, Renfrew and Dumbarton	714
Ayrshire, Dumfries and Argyll	51
Great Britain*	33,136

Prosecutions in regard to horses employed at mines in Great Britain

Year.	No. of Charges.	No. of Convictions.
1926	16	16
1927	82	78
1928	301	291
1929	401	131
1930	50	50
1931	40	38
1932	38	34
1933	10	10
1934	25	25
1935	16	16
1936	16	15

*Including particulars in respect of mines under the Coal Mines Act in Cleveland, Lincolnshire and Northamptonshire.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Mar. 15th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, 4 p.m.

Mar. 17th.—V.V.B.F., Ladies' Guild: Dance, Princes Galleries, Piccadilly, W.

Mar. 17th.—Meeting of the Scottish Metropolitan Division, N.V.M.A., at Edinburgh, 2.30 p.m.

Mar. 19th.—Royal (Dick) Veterinary College Extension Fund Ball, Assembly Rooms, Edinburgh, 10 p.m.

Mar. 19th.—Annual General Meeting of the Southern Counties Division, N.V.M.A., at Salisbury, 2.30 p.m.

Mar. 20th.—Annual General Meeting of the North of England Division, N.V.M.A., at Newcastle-on-Tyne, 11 a.m.

Mar. 23rd.—Meeting of the North Midland Division, N.V.M.A., at Sheffield, 4.30 p.m.

Mar. 24th.—Annual General Meeting of the Western Counties Division, N.V.M.A., at Exeter, 2 p.m.

April 1st.—Annual Fees due to R.C.V.S.

April 5th.—Last day for applications for tickets for R.C.V.S. Annual Dinner.

April 5th.—Meetings of Committee, N.V.M.A. (Place and times to be announced later).

April 6th.—Extraordinary General Meeting of members, N.V.M.A. Meetings of Committees and Council, N.V.M.A. (Place and times to be announced later).

April 7th.—R.C.V.S. Committee Meetings.

April 8th.—R.C.V.S. Committee Meetings.

April 8th.—R.C.V.S. Annual Dinner, May Fair Hotel, Berkeley Street, W., 7.30 p.m.

April 9th.—R.C.V.S. Committee and Council Meetings.

May 6th.—Nominations for Election to R.C.V.S. Council due.

May 12th.—Coronation Day.

May 13th.—Entries for D.V.S.M. Examination due.

May 20th.—R.C.V.S. Voting Papers issued.

May 27th.—R.C.V.S. Voting Papers to be returned.

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Departmental Committee on Veterinary Education

Our readers will be gratified to learn that the representation of the veterinary profession on the above Departmental Committee, of which

Mr. John Smith has been hitherto the sole veterinary member, is to be increased by the addition of Dr. W. R. Wooldridge, M.Sc., M.R.C.V.S., who has accepted the invitation to serve on the Committee extended to him by the Minister of Agriculture. Dr. Wooldridge was a member of the deputation that recently gave evidence before the committee on behalf of the N.V.M.A.

It will be recalled that from the first announcement of the formation of this committee the "National" has repeatedly urged, both directly and in collaboration with the Parliamentary Science Committee, that a second veterinarian should be added to this committee. It was largely owing to the importance of this matter that the Editorial Committee published during the last few months a number of editorials dealing with various problems connected with veterinary education and research We cannot but feel pleased, therefore, that the Minister of Agriculture has, even at this late hour, asked a second member of our profession to join the committee.

* * * * *

PERSONAL

Major Aston's County Council Election Success

What is described, by the local Press, as the most remarkable success achieved in the elections for the five contested divisions of the Shropshire County Council was gained by Major W. F. Aston, M.R.C.V.S., of Shrewsbury. In the Condover division, Major E. R. T. Corbett, Chairman of the Town Planning Committee and Vice-Chairman of the Roads and Bridges Committee, was defeated by Major Aston, of Condover Grange, who secured a majority of 245 votes on a poll of 1,200.

. . . . .

Will.—Holmes, Mr. John Thomas, J.P., of Bourne, Lincs., veterinary surgeon (net personalty, £19,203), gross value, £20,045.

* * * * *

R.C.V.S. OBITUARY

Gilruth, Colonel John A., D.V.Sc. (Melb.), F.R.S.E., Chief of the Division of Animal Health, Council for Scientific and Industrial Research, 314, Albert Street, East Melbourne, C.2, Australia. Graduated London, December 14th, 1892. Died March 4th, 1937; aged 66 years.

Margarson, Edward, Market Place, Swaffham, Norfolk. Graduated New Edinburgh, January 15th, 1880. Died March 3rd, 1937; aged 84 years.

Short, Frederick John, West Ridge, St. Mary Church, Devon, Major A.V.D. (Retd.) Graduated London, July 3rd, 1879. Died March 1st, 1937; aged 79 years.

The Late Dr. J. A. Gilruth

[Preliminary Notice]

Dr. J. A. Gilruth, whose death we record above with the greatest regret, was a veterinarian who, possessing outstanding gifts both as a scientist and an administrator, played a most distinguished part in the veterinary public health services both of New Zealand and Australia, his powers being finally afforded the widest scope possible in his tenure of the important post of Chief of the Division of Animal Health of the Commonwealth Council for Scientific and Industrial Research.

The son of Andrew Gilruth of Seaton of Auchmithie, Arbroath, John Anderson Gilruth was educated at Arbroath and Dundee, and studied law and afterwards veterinary science in Glasgow, London and Paris. He was medallist in botany and anatomy at Glasgow University, and qualified at the Royal College of Veterinary Surgeons in 1891, taking afterwards the doctorate of veterinary science at Melbourne. In 1893 he was appointed to the Government Veterinary Service in New Zealand, and became in succession Chief Veterinarian, a member of the New Zealand Royal Commission on Public Health, and pathologist to the New Zealand Health Department.

In 1908 Dr. Gilruth was appointed Professor of Veterinary Pathology and Director of the Research Institute at the University of Melbourne, and in 1912 he became Administrator of the Northern Territory, of which he had had some experience as a member of the Federal Scientific Mission in 1911, the year in which the Territory was transferred from South Australia to the Commonwealth. Dr. Gilruth held the office of Administrator until 1920, and then, returning to Melbourne, was appointed Chief of the Division of Animal Health of the Commonwealth Council for Scientific and Industrial Research. A valued and prolific contributor to veterinary literature, he was a corresponding member of the Société de Pathologie Exotique of Paris.

* * * * *

LADIES' GUILD DANCE

As this is the last occasion upon which notice of this year's dance in aid of the Victoria Veterinary Benevolent Fund will appear in our columns, we make a special appeal to our readers to support the function, to be held at Princes Galleries, Piccadilly, W., on Wednesday next (9 p.m.-2 a.m.). We regret to learn that, if members of the profession do not take tickets in larger numbers than they are doing at present, the sum to be handed over to the Fund will be substantially smaller than was the case as the result of last year's highly successful event.

* * * * *

LEGAL NOTES

Tuberculous Cow: Alleged Breach of Warranty

A case of interest to both veterinarians and farmers was heard at the Barnard Castle County Court before His Honour Judge Richardson, on February 20th. The plaintiff, William Marston, a cattle dealer, High Street, Kirkby Stephen, claimed £16 11s. damages for alleged breach of warranty with respect to a cow, from Hector Hutchinson, Hill House, Langleydale, a farmer, cow and milk dealer.

Mr. J. Harker, Kirkby Stephen, appeared for plaintiff, and Mr. C. D. Aarvold (instructed by Mr. E. H. R. Freeman) defended.

Mr. Harker said the damages were assessed at £15 10s. plus one guinea veterinary surgeon's fee. The defendant admitted that the cow was sold at the Barnard Castle Mart to the plaintiff on September 2nd and it was subsequently slaughtered on September 26th. The cow was alleged to be suffering from tuberculosis and a notice was prominently displayed in the Mart prohibiting any vendor from bringing into the Mart an animal suffering from any infectious disease. He submitted that tuberculosis was an infectious disease. It was an implied condition that the goods should be of a merchantable

quality. The points to be decided were whether there was a warranty and whether the cow was properly slaughtered.

Reginald Henry Elliott, one of the auctioneers of the Barnard Castle Mart, put in the Mart conditions, which prohibited animals with any disease of an infectious nature from being brought into the Mart.

Examined by Mr. Aarvold, witness admitted that when warrants were given they were entered in a book. His book contained no warranty respecting the particular cow sold by defendant. Witness had given no personal warranty when the cow came into the ring. Regulation 4 stated that each lot was sold with its errors and faults of every description and at the purchaser's risk. The first he had heard about giving any warranty was when he received a letter from the plaintiff's solicitor in November. The letter surprised him. He had given no warranty whatever.

Replying to Mr. Harker, witness said that never before had he had a case of a cow sold by him found subsequently to be suffering from tuberculosis.

His Honour: There is nothing to show I suppose that a cow is suffering from tuberculosis?

Witness: Nothing whatever.

The plaintiff, a butcher and cattle dealer, said he attended the Barnard Castle Mart on September 2nd and purchased a newly-calved cow that had been passed at £15, for £15 10s. He asked defendant if it was a straight cow and defendant replied "Yes." It was usual to say "Is the cow all straight and correct?" when buying cattle. Witness was somewhat suspicious of the cow, which was a little long in the loin. Witness took the cow to the Hexham Mart where it was sold for £15 5s. A week later the purchaser brought it back and said it was not correct. It was brought to Barnard Castle but Hutchinson would not take it back. The cow was then transferred to Kirkby Stephen and examined and found to be suffering from tuberculosis. Witness reported it to the county authorities, and. after being examined by another veterinary surgeon it was ordered to be slaughtered. Witness only received 35s. for it from the county. Hutchinson came a day later and identified the carcase. The cow had tuberculosis all over it, he had never seen an animal in a worse state.

Cross-examined by Mr. Aarvold, plaintiff said he bought the cow believing it to be sound. He bought cows every day in the week and he always said the same thing when buying, "Is it straight and all correct?" It was customary to purchase an article as straight and if it was not so, to return it. The rules at the Hexham Mart were the same as at Barnard Castle. He had not tried to sell the cow after it had been returned from Hexham. He saw defendant on September 14th but did not then know definitely that the cow was suffering from tuberculosis. Defendant refused to take it back. Plaintiff certainly did not ask defendant to allow him £8 or £9 back for the cow, and say that he could then sell the carcase for meat for £5 or £6. It would be ridiculous to sell a milk cow for meat.

Mr. Oscar Stinson, M.R.C.V.S., Appleby, county veterinary officer for Westmorland, said the cow had been reported to him on September 22nd. He examined it and the tuberculin test was positive. On the Saturday the cow was killed, and a *post-mortem* revealed advanced tuberculosis. There was no doubt that the disease had been in existence for at least three months.

Replying to Mr. Aarvold, witness agreed that 40 per cent. of dairy cows had tuberculosis in a latent form, but the ordinary clinical examination did not show it. Frequently latent tuberculosis became active after calving.

His Honour: It can have tuberculosis for a long time without the condition becoming obvious to an expert?

Witness: Yes.

His Honour: The cow could have been submitted to a clinical test on August 31st and be found all right although it was full of latent tuberculosis?

Witness: It could.

In reply to Mr. Aarvold, witness agreed that if care was taken after calving, it was possible that latent tuberculosis might not become active, but if the cow was travelled considerably it might. It was not so in that case, however, for the lesion was at least three months old.

Mr. W. B. Reed, M.R.C.V.S., Lazenby, said he examined the cow on September 20th and found as the result of a clinical examination that it was suffering from advanced tuberculosis.

Mr. Aarvold submitted that on the evidence there was no case to answer. The auctioneer had expressly stated that he gave no warranty, and it was no express warranty for a cow to be brought into the ring. Plaintiff had admitted that he had bid for the cow when in the ring and had been quite prepared to pay £15 for it.

His Honour: Then you submit that if you go into a shop and buy a watch and say, "Is this a good watch," and the tradesman replies, "Yes," and it subsequently stops, there has been no breach of warranty.

Mr. Aarvold: Yes.

Mr. Harker submitted that a warranty had been given when defendant said the cow was correct.

His Honour pointed out that a tradesman's opinion concerning his goods was not necessarily a warranty.

The Defence

His Honour expressed a desire to hear the defendant, who was accordingly called. Defendant stated that he took the cow to the Barnard Castle Mart on September 2nd, four days after she had calved. On the day she calved, the veterinary surgeon of Durham County examined the cow with the rest of the herd and passed them all as all right. He had his herd examined every three months and he sold grade "A" milk. He put the cow in the Mart in the morning and again in the afternoon, but as the bids were not sufficient, took her out. He then met Marston who asked what he wanted for her. Witness replied £18 but after conversation accepted £15 12s. 6d. He had never been asked anything about the cow. He believed her to be sound when he sold her. As a rule, any questions asked about a cow concerned her milking qualities.

It was nearly a fortnight later before he saw the plaintiff again. Plaintiff described the cow as "rotten," and said he thought she was tuberculous. Witness refused to take the cow back, remarking that she could easily have taken cold. Plaintiff asked for £8 or £9, and said that the carcase could be sold for meat. Witness refused to do that. Two days later, plaintiff again appeared and said the cow was in a field near by. Witness refused again to take it back and the next he heard was that it had been slaughtered.

Replying to Mr. Harker, witness said he had a herd of 70 cattle and all had been examined on August 31st. The clinical examination was satisfactory. Marston did not ask him if the cow was straight and correct; he only asked the price.

Mr. H. P. Lightfoot, M.R.C.V.S., district veterinary officer for Durham County, said he inspected the herd of Mr. Hutchinson on August 31st. Amongst them was the cow spoken of. She was in a fair milking condition, and as far as he could tell from a clinical examination, she was free from tuberculosis. Any tuberculosis that she had must have been latent. If the cow had been kept at home it was quite possible that the latent tuberculosis would never have become active. He thought that taking the cow from Kirkby Stephen to Hexham would have had a very harmful effect, as it would have lessened her resistance to anything. It would be a very unwise thing for any vendor to guarantee a cow as entirely free from tuberculosis in any form.

Cross-examined by Mr. Harker, witness said the herd comprised 30 milk cows. All the cows were ear-tagged and numbered. He saw the cow sold at the Mart. He did not take the temperatures of the cows; it was not necessary for a clinical examination.

Claim Not Established

Summing up, His Honour said it was very unfortunate that the cow developed tuberculosis and had to be destroyed, because it meant a loss for someone. *Caveat emptor* was a phrase in law. Unless the plaintiff could prove that the defendant neglected to carry out some warranty he could not recover. In plaintiff's claim, it was stated that a warranty had been given by the auctioneer. That was not so and so went by the board. It was also in the claim that there was an express warranty by the defendant that the cow was sound and correct. The evidence stated that the actual words used were that the cow was straight and correct. He did not know what these words meant, but was that a warranty in the sense of an additional contract given at the time? He did not think that even if those words were used, "safe and correct" could be a warranty against tuberculosis. A warranty meant something more than that. He was inclined to think that nothing was said, but if it was, it was nothing like a warranty. Obviously the defendant had no grounds for thinking that there was anything wrong with the cow which had been passed by the veterinary surgeon four days previously.

There was some reason for thinking that the latent tuberculosis had been developed through the cow being taken from mart to mart. When sold there was nothing to show that the cow had tuberculosis. Plaintiff, under the conditions of sale, had every opportunity to examine his purchase before payment. If the tuberculosis was latent, he had no hesitation in saying that it was aggravated by the treatment over the next few weeks.

Even if a warranty had been given, no doubt Mr. Aarvold could have established that in view of the time that had elapsed and the way the cow was treated, it could not be brought home to the defendant that he was responsible for its condition. It was an unfortunate loss for the plaintiff but he had not substantiated in any way his claim, and judgment would be given for the defendant with costs.

. . . . . .

"Amateur Way" of Killing a Cow.—A case with rather unusual features was heard at Exmouth Sessions when Lewis Drake, of Old Winslade Farm, Clyst St. George, was fined £3 for causing unnecessary suffering to a cow.

An R.S.P.C.A. inspector informed the Court that a police officer found the carcase of a cow in one of defendant's fields. It was in fair bodily condition, but on the right side of the neck was a wound six inches long, and on the left side another four inches long. The constable interviewed Drake, who said the previous night he turned the cow out in the field with the rest of the cattle, and it was then all right. The following morning he found it lying on the ground unable to rise, and, fetching a knife from the house, he made a wound in its neck and killed it. He thought it might have been injured by other bullocks.

Mr. D. S. Barber (Chief Veterinary Officer, Devon County Council), said a *post-mortem* examination revealed that the cow died of asphyxia. The wound had missed the main blood vessels of the neck, and there was no cutting of the jugular vein.

Defendant stated that, finding the cow unable to rise, he thought it would be better to put it out of its suffering. He considered that had he arrived half an hour later the animal would then have been dead.

The Chairman said the Bench were of the opinion that defendant did not intend to cause unnecessary suffering to the animal, but he undoubtedly did so by the amateur and clumsy way in which he killed it.

. . . . . .

SAFETY OF "ACCREDITED" MILK

The Veterinary Control Factor

In the section which it devotes to matters of Public Health, the *Lancet* of February 6th, in the course of its report of the recent "Accredited Milk Conference," to which reference has been made in these columns and which is dealt with editorially elsewhere in this issue, states: "When the meeting was thrown open to discussion many persons prominent in milk control took part; each speaker emphasising the importance of the particular office or section which he represented. There was, however, a general feeling that it should be possible for the various interests to get together and evolve a scheme for more uniform administration.

"Several veterinary officers present regarded Dr. Savage's remark on the value to the accredited milk scheme of veterinary inspection as a criticism of the value of veterinary work generally. Dr. Savage replied that he was strongly in favour of enlisting veterinary surgeons in any scheme for improving the milk-supply—he was, in fact, himself largely responsible for whole-time veterinary surgeons having been appointed in his own county—but he felt they were misapplied in routine veterinary inspection and should be utilised mainly to build up herds free from tuberculosis. The words to which exception were taken were, "Personally I do not regard the veterinary control required as materially influencing its safety"—and this was, Dr. Savage suggested, a scientific matter capable of being judged by the application of scientific facts. He agreed that the quarterly veterinary inspection required under the Accredited Scheme was of service to the milk producer, but it did not materially influence the safety of the milk. Most of the conditions detected, of which mastitis was the commonest, were of importance in relation to the health of the herd, but of no moment as regards human safety, for they were not transmissible to man. The veterinary control did not concern itself with undulant fever and practically the only disease which came into question was tuberculosis. But this control had no effect on the incidence of bovine tuberculosis and indeed no such effect was to be anticipated.

Some slight reduction might be expected in the incidence of tubercle bacilli in the milk, but examinations of grade 'A' or accredited milk all over the country showed still a high proportion of samples containing tubercle bacilli. For 1936 in Somerset, of all the 442 samples collected at farms 3·3 per cent. were positive; in the samples from accredited farms taken separately the percentage was not smaller. Veterinary control did not, alas! materially influence the safety of accredited milk."

* * * * *

MAKING THE MOST OF OUR GRASS

In the light of subsequent references to the importance of the above matter contained in Sir William Beveridge's momentous contributions on "The Home War Front" in recent issues of *The Times*, it would seem that a note of some significance to the food control policy of this country was sounded by one of the speakers in the discussion on Mr. James Mackintosh's paper on the principles of dairy-cow feeding and whose remarks are reproduced elsewhere in this issue. The former's insistence on grass—its natural food—as the best dietary for the dairy cow, provided it can be obtained in good quality and abundance whenever required, and his forecast that the time is not far distant when, by artificial drying, grass will be conserved so that it will retain the properties it possesses in the young and highly nutritious stages of growth, are suggestively and perhaps prophetically linked with the following observations by Sir William:—

"In regard to feeding stuffs for animals, perhaps the most important service the Food (Defence Plans) Department could render would be to explore the possibility of our becoming less dependent on imports, by making better use than now of the chief feeding crop that we grow at home—namely, grass. Our traditional method of preserving grass for the winter, by haymaking, is extraordinarily wasteful of its feeding value. To cut grass young, before it has become fibrous, and dry it artificially preserves this value to a remarkable extent. The economics of the drying process needs further investigation. There is at least a *prima facie* case for thinking that general installation of grass-drying plants, in place of haymaking, might prove to be both a gain in peace and among the most important steps open to us for greater safety in war. It involves not just the making of plans for war pigeon-holes nor the subsidising of farmers to continue on traditional lines, but a change of agricultural methods now. This, however, under existing arrangements, is the responsibility not of the Food (Defence Plans) Department of the Board of Trade, but of the Ministry of Agriculture in England and Wales, of the Department of Agriculture for Scotland, and of yet another authority in Northern Ireland."

At a later stage in this article Sir William observes: "Storage is not the only way of keeping reserves for war-time consumption. A substantial reserve of food for man is carried automatically in the grain which goes normally to feed animals or to make beer or spirit. By lengthening the extraction of flour from wheat and by dilution of wheat with barley (diverted from pigs and beer) the supply of cereals for human consumption can be increased materially. Another possibility lies in peace-time increase of our flocks and herds, with a view to killing them down in war. If, for instance, our dairy herd were brought to a point much higher than at present, with a correspondingly increased consumption of milk and dairy products in peace time, the herd itself would form a reserve stock of meat for war time. In this and in other ways the treatment of livestock is the crux of war time feeding policy."

The above, and other portions of Sir William Beveridge's contribution, are the subject of the following comment by Sir Arthur Duckham, appearing subsequently in the correspondence columns of *The Times*:—

"In the second of his important articles on 'The Home Front in War,' Sir William Beveridge rightly points out that 'the treatment of livestock is the crux of wartime feeding policy.' He points out that livestock are in varying degrees wasteful converters of energy, and compete with human beings for such feeding stuffs as wheat, barley, and oats, and, in so far as they depend on imports, they compete for tonnage. Animal feeding stuffs, he adds, are only the means to human food.

"As one who some ten years ago investigated the comparative efficiency of different types of livestock as converters of energy (*Journal*, Royal Agricultural Society, 1926), and examined the technical and engineering problems associated with grass drying (Empire Marketing Board, E.M.B.8., 1928), I feel that Sir William's article may leave the impression on some minds that their dependence on imported feeding stuffs, and on acreage which might be devoted to crops for immediate human consumption, would render livestock and their products a luxury in time of war. Sir William, I am sure, did not intend to convey this conclusion, and would, I hope, admit that, in the event of war, the good dairy cow and the pig should be called upon to occupy an important sector of the home front, for the following reasons.

First, because in a temperate climate like ours, the soil can only produce fats and first-class proteins (which are essentials of human diet) through the medium of grassland and crops devoted to livestock.

"Secondly, because the good dairy cow could convert dried grass (which yields 200 per cent. more energy value an acre than wheat or other cereals), and the pig, recent German developments suggest, could convert potatoes, sugar beet, and other root crops (most of which yield at least 100 per cent. more energy value an acre than cereals) into fat and first-class protein, without demanding a prohibitive share of the reduced supplies of imported and home-grown cereals which would otherwise be consumed by humans.

"Thirdly, because the good dairy cow and the pig lead the field as efficient converters of energy, and, acre for acre, land devoted to dried grass and root crops for their use could, while helping to swell the diminished but essential supply of first-class protein and fats, yield nearly as much energy value in the form of fat and protein as cereals yield carbohydrates and protein.

"It may be objected that these reasons have no more than an academic validity, and that such a policy would be inapplicable in practice. Nevertheless, if recent developments in grass and root crop drying in this country and in pig feeding in Germany can, with the help of agriculturists and engineers, be consolidated, it would appear that the dairy cow and the pig could in time of war make a big contribution to the essential supply of fats and first-class proteins, without unduly reducing the supplies of cereals for human consumption."

Finally, progress in grass drying is the subject of a note in a recent issue of *Nature*, this

reading: "At the second Congress of Mechanised Farming held at Rhodes House, Oxford, on January 5th to 8th, when recent developments were described, a paper by Mr. E. J. Roberts on 'A Year's Progress in Grass Drying' excited much interest. A résumé of this paper is published in *Engineering* of February 5th. The author points out that whereas there were only six driers in operation in 1935, there were 46 by the end of the 1936 season. The engineering difficulties in connection with drying plant have been successfully overcome. This is confirmed by papers at the Congress giving the experience of users. We know that inventors are busy developing new methods and rapid progress in this direction will doubtless soon be made. For the year just closed it is expected that the production will be 10,000 tons. In the United States for the same period, it was 50,000 tons. In countries abroad the usual practice is to dry the grass in large centralised units. In Great Britain, in general, only small localised units are used. This is a pity as it is not the most economical method. In a paper read at the conference by Professor J. A. Scott Watson, it was shown that the remaining problems are to bring down the cost of the drying plant, the fuel cost and the labour cost and to increase the output. Mr. Roberts in his paper stated that one large drier evaporated nine hundredweight of water with one hundredweight of coal for a short period and worked at a normal figure of eight hundredweight. Smaller driers give efficiencies of three-and-a-half to five-and-a-half hundredweight of water per hundredweight of coke. If we take the calorific value of the coal to be 14,000 B.Th.U. and that of the coke to be 13,000 B.Th.U., the advantage lies greatly in favour of the large drier."

* * * * *

VARIATION IN ANIMAL VIRUSES

A paper by G. M. Findlay* dealing at length with the whole question of variation in animal viruses was recently the subject of an annotation in *The Lancet*, as follows: "Variation in filtrable viruses has been known nearly as long as the viruses themselves. Almost before the conception of filter-passing viruses had taken shape, and certainly before it was generally recognised, Pasteur demonstrated that a variant of the virus of rabies could be produced, and, as everyone knows, employed it in the prophylaxis of human infection. The adaptation of the virus of small-pox to growth in the tissues of the calf, resulting in the fixed variant vaccinia, also belongs to the early history of viruses. And since that time, especially in the last decade, many more examples of virus variants have been brought to light. Some of these have been discovered more or less by accident—for example, the necrotic variant of Shope's rabbit-fibroma virus—but most have been sought intentionally, often with specific prophylaxis in view.

"Much of Findlay's work on viruses has been concerned with the production of variants and a study of their properties, so that he is peculiarly fitted to write such an article, and he has done it extremely well. Starting with an enumeration of all the available facts concerning virus variants, he briefly reviews our knowledge of variation in multicellular and unicellular organisms and finally considers the application of this to viruses. Naturally it is harder to study variation in viruses than in multicellular organisms or even unicellular organisms like protozoa, for viruses cannot be cultivated apart from living cells. As yet it has not been found possible to raise strains of virus from a single virus particle and there appears little likelihood of viruses possessing a demonstrable nuclear apparatus, thus making it impossible to distinguish between Lamarckian and genetic variation. Nevertheless, as Findlay points out, the available evidence suggests that there is no fundamental difference between variation in viruses on the one hand and in unicellular and multicellular organisms on the other. It is true that the absence of any demonstrable mechanism whereby hereditary characters are transmitted, such as exists in higher plants and animals, makes the application of the term mutation to some virus variants incorrect, and in order to overcome the difficulty it has been suggested from time to time that viruses are themselves genes; that they have arisen from higher forms and that as the result of highly specialised parasitism all structure and function, other than that associated with the hereditary characters, has been lost. This, however, is pure hypothesis with little to commend it, and it seems more reasonable to assume that in such primitive forms of life as viruses any such specialised medium for the transmission of heritable characters has not been developed. That viruses are living things is strongly supported by the fact that they exhibit this phenomenon of variation. Indeed, as Findlay says in his conclusions, it is hard to explain the facts except by regarding viruses as organised living entities. But interesting and important though this aspect of variation in viruses may be there is an eminently practical side to it. Virus variants have proved their value in the active immunisation against virus infections: in recent years we have seen them used with success in the prophylaxis of yellow fever and horse-sickness, and no doubt the near future will provide further examples. It is this side of the problem, quite apart from the academic one, which will ensure adequate attention being paid to this interesting question of variation in viruses."

*Findlay, G. M. (1936.) *J. R. micr. Soc.* 56. 213.

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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THE MEANING OF "SOUND" OR "UNSOUND"

To the Editor of the Veterinary Record

Sir,—Would any of your readers be so kind as to inform me what they themselves intend to convey when, on a certificate of soundness, they certify the animal as being sound or unsound?

On August 18th, 1938, the rule as to unsoundness, which is still observed, will be a century old, for it was on that day in the year 1838, that Baron Parke laid it down at Bristol Summer Assizes. The rule is: "If at the time of the sale the horse has any disease which either actually does diminish the natural usefulness of the animal so as to make him less capable of work of any description, or which in its ordinary progress will diminish the natural usefulness of the animal; or if the horse has either from disease or accident, undergone any alteration of structure that either does at the time, or in its ordinary effects will diminish the natural usefulness of the horse, such a horse is unsound."

Later, in the case of *Kiddell v. Burnard,* Baron Parke re-stated his rule, concurrence with which was expressed by Baron Alderson, who said: "I am of the same opinion. The word 'sound' means 'sound,' and the only qualification of which it is susceptible arises from the purpose for which the warranty is given. If, for instance, a horse is purchased to be used in a given way, the word 'sound' means that the animal is useful for that purpose, and 'unsound' means that he at that time is affected with something which will have the effect of impeding that use.

"If the disease be one easily cured, that will go in mitigation of damages. It is, however, right to make to the definition of unsoundness the addition my brother Parke has made, namely, that the disqualification for work must arise either from disease or accident." It will be noted that Baron Parke speaks of "work of *any* description" and not of "work of *every* description," while Baron Alderson leaves no doubt that "'sound' means 'sound,'" and the only way the word can be qualified is by mentioning the purpose for which the warranty is given.

The thing, however, that arises most clearly out of the rule is that soundness is a question of usefulness more than a question of disease. If this deduction be a correct one, a useful and concise definition would be: "*A horse is sound if it is free from disease, abnormality, defect, or impediment which would, or in the future would be likely to, impair its usefulness.*" Usefulness for what? That is the next question, when one bears in mind the phrase "work of *any* description," and the words, ". . . the purpose for which the warranty is given." Does it not appear that a certificate should always state the purpose for which the animal is to be used, for in the words of Baron Alderson: ". . . if a horse is purchased to be used in a given way, the word sound means that the animal is useful for that purpose"?

As the above remarks have nothing to do with breeding stallions I am keeping quite clear of the diseases or defects prescribed in the Regulations under the Horse Breeding Act, 1918, as rendering a stallion unsuitable for the service of mares. It would be very interesting to have the views of your readers as to what is meant when saying a horse is sound.

Yours faithfully,
THOMAS LISHMAN.

23, Queen's Gate Gardens,
S.W.7.

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EXTRA-MURAL CLINICAL INSTRUCTION

To the Editor of the Veterinary Record

Sir,—Replying to Professor Buxton's appeal in this week's *Record,* I fear that country practitioners will become more and more unwilling to take pupils as time goes on. For some time past the practitioner has had to put up with a very great deal. The posts which he has held for years are gradually being taken from him and handed over to so-called whole-time specialists. Most of these inspectors are old pupils of country practitioners. Are we to continue to train men to fill these posts and so to continue to reduce our income? How many present-day students have the slightest intention of taking up country practice after they are qualified?

For some years I have always had one or two pupils during the vacations and have never charged one penny. Some are now qualified, but I cannot think of one who is in general practice. During my recent long and serious illness I hunted the whole of England and advertised in the Press but could not get anyone to help me out.

The rule referred to by Professor Buxton was made by the Royal College, but it depends entirely on the country practitioner whether it is carried out or not. If the Royal College is to expect the support of the "backbone" of the profession, it will have to make a greater effort to protect it in the future. We practitioners to-day are left almost entirely to our own devices and we have to fight our own battles in the best way we can.

With regard to the women students—only a very small percentage will ever take up country practice, so the practitioner is merely being made a convenience for teaching the students enough to pass their examinations. We are asked to teach students probably the most important part of their work; in fact, they are handed over to us to finish off after our learned professors have done with them, yet we are looked upon in some quarters as an incapable lot of farriers unfit for public health work of any sort.

I expect I shall continue to take pupils each vacation, but I think Professor Buxton and others should realise the feeling which is generally spreading amongst the country practitioners and take stern measures to protect us from the gradual influx of "whole-time" inspectors, no more qualified to do the work than we are ourselves, and the serious financial loss to which we are subject. If something is not done promptly and energetically I, in common with hundreds of others, can see the gradual extinction of the country practitioner, which would leave a clear field for all sorts of quackery. Professor Buxton asks for our support—he shall have it wholeheartedly, but we must expect his in return.

I am, Sir,
Yours truly,
ROBERT E. S. TUCKEY.

St. Mary's House,
Whitchurch,
Shropshire.
March 6th, 1937.

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BCG VACCINATION AND TUBERCULIN TESTING IN VETERINARY PRACTICE

To the Editor of the Veterinary Record

Sir,—Owing to the prevalence of tuberculosis in our herds, complete eradication by tuberculin testing and slaughter of reactors is ruled out. The method of preventive inoculation will doubtless be used.

Spahlinger's method is, I believe, the only proved method of prevention, and in my opinion this is the method which will eventually be employed, especially as the vaccinated can be submitted to the double intradermal test. It is to be hoped that Northern Ireland will soon vindicate this method.

Although much work has been done on BCG vaccination, this method has one insuperable obstacle to its use. The intention of the vaccine is to produce allergy. If an animal is allergic it will always respond to an antigen—your *Lancet* excerpt (*V.R.*, 49, 10, pp. 313-314) makes this clear. After describing the high and varied tuberculosis morbidity in the personnel of his hospital in recent years, Holmgren concludes that the way to *reduce* (he does not say prevent) this morbidity is to treat every new member of

the staff with B C G if he or she is *tuberculin negative*; *i.e.*, to treat them with B C G in order that they may become allergic and thus *tuberculin positive*.

If the B C G method is eventually decided on in this country then tuberculin testing will be useless. It appears that unless you can, by oft-repeated injections, make the animal allergic, and keep it in an allergic state, the B C G method fails. If it succeeds, the animal, being allergic, will always give a reaction to tuberculin. In that case what is to become of all attested and tuberculin-tested herds? Will there be any criterion, other than a *post-mortem* examination, that the animal is free from tuberculosis?

Yours faithfully,
J. W. Hall Masheter.

Ruddle House,
Newnham-on-Severn.
March 6th, 1937.

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COLLOQUIAL WORDS USED IN ANIMAL HUSBANDRY AND VETERINARY MEDICINE

To the Editor of the Veterinary Record

Sir,—I am glad to see that Mr. F. T. Harvey has added his quota to the observations made regarding the spreading of slang or colloquial words cut off from the Roman or Latin veterinarius, medicino-veterinario, or medicina veterinaria—to show that the word "vetted" is being widely used for examined, overhauled, scrutinised. In this connection, I quote from the motoring correspondent of *The Star*, February 17th: "I think that many accidents would be prevented by a more careful 'vetting' of cars by their owners."

The colloquialism commonly used by London farriers, "rossall" or "rossell," used to mean that the horse is a kicker, so beware. I first heard this expression when I was a pupil in the East End of London in 1882. Some years before his death I called the attention of Sir F. Smith to it and he said he had never heard of the word before, but it was not long before he wrote to tell me that it was a Staffordshire archaic word. He did not give me his authority. In the fifth edition of Halliwell's "Dictionary of Archaic and Provincial Words," 1901, Vol. 2, the word "rossell" is given to mean: To kick severely. *Salop.* I would like to know in what parts of the British Isles this word is still used by farriers, etc. It is likely that this is an old Anglo-Saxon word, probably old German. All the usual dictionaries I have consulted do not mention this word, but perhaps some of the most up-to-date slang and other dictionaries refer to it.

In different parts of the country colloquial words are used for a litter of pigs. Some term them a "farrow," others as "followers," etc. It would be interesting if veterinary surgeons who know of colloquialisms for animals, etc., used in their district would publish them in the *Veterinary Record*.

Yours faithfully,
Henry Gray.

Kensington, W.
March 6th, 1937.

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STUDY OF THE CAMEL

To the Editor of the Veterinary Record

Sir,—I should be obliged if you would allow me space to request any member who works with camels kindly to send me regularly copies of reports or original research articles for the official library here. I also wish to purchase copies of the older anatomical studies of the camel.

Yours faithfully,
Edward F. Peck,
Veterinary & Agricultural Officer.

Burao,
British Somaliland.
February 14th, 1937.

Diseases of Animals Acts

SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th to 28th Feb., 1937	25	28	—	—	7	11	9	34	20
Corresponding period in									
1936	24	26	—	—	8	40	19	70	37
1935	17	22	1	60	4	6	17	52	21
1934	23	23	—	—	8	16	34	53	22
Total 1st January to 28th February, 1937	119	134	3	262	42	70	83	199	117
Corresponding period in									
1936	95	119	4	379	34	117	106	373	217
1935	77	86	21	4,345	43	60	120	264	100
1934	85	85	—	—	54	92	245	291	157

Note.—The figures for the current year are approximate only.

§ Excluding outbreaks in Army Horses.